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WESTERN CAPE

**EXPLORING FACTORS THAT INFLUENCE LEARNERS' USE OF
SANITATION FACILITIES AND PERSONAL HYGIENE PRACTICES
IN A GIRLS' BOARDING SCHOOL, ZOMBA DISTRICT, MALAWI**

By

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A mini-thesis submitted in partial fulfilment of the requirements for the degree of **Masters in Public Health (MPH)** in the School of Public Health, Faculty of Community and Health Sciences, University of the Western Cape, Cape Town, South Africa

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November, 2016

KEY WORDS

Sanitation

Sanitation facilities

Water supply

Hygiene practices

Water and sanitation access

Girl's boarding school

Secondary school

Malawi

Qualitative study



ABSTRACT

Background: Millennium Development Goal 7 was to ensure environmental sustainability by aiming to halve the proportion of people without sustainable access to basic sanitation and safe drinking water by the year 2015. The 2015-MDG Report estimated that the use of improved sanitation rose from 54% to 68% globally, but the target of 77% was not met, and that implies slowing the progress in the health and education sectors. Although Malawi has made significant progress in increasing access to safe water and improved sanitation in comparison to other Sub-Saharan African countries, disparities in improved water supply and sanitation within Malawi remains a challenge. In Malawi, only about a quarter of all schools have improved latrines with a ratio of one latrine for every sixty learners. While the water and sanitation situation in primary schools of Malawi is reported to be making progress, such progress remains unreported in secondary schools.

Aim: The purpose of this qualitative study was to provide insight on the water and sanitation situation in secondary schools by understanding factors that influence learners' use of the water and sanitation facilities and personal hygiene practices in a girls' boarding secondary school in Zomba District, Malawi.

Methodology: This study employed a descriptive qualitative study design using individual interviews, focus group discussions (FGDs) and observations. A purposive sample consisting of 12 learners participated in two FGDs, while individual interviews were conducted with 6 prefects, 2 teachers responsible for sanitation at the school and 1 matron. The FGDs and individual interviews were targeted at exploring these participants' perceptions, experiences, challenges faced in the use of water and sanitation facilities and perceptions of appropriate interventions to improve hygiene practices and utilization of sanitation services. Thematic analysis was used to analyze the data.

Findings: The findings indicate that there were several factors that influenced learners' use of water and sanitation and their hygiene practices at the school. One of the main challenges was the irregular supply of safe water by the Southern Region Water Board which meant that alternate sources of water, which was not always potable, had to be used instead. Poor water and sanitation infrastructure and facilities including lack of privacy in shower cubicles and the poor condition of the incinerator that is meant for disposal of sanitary pads were other challenges facing the learners. There were also insufficient toilets and shower cubicles for the

number of learners at the school. A good number of learners knew the importance of hand washing for their personal health at school, but limited accessibility to running water compromised their hand washing practices and personal hygiene including menstrual hygiene.

Conclusion: It can be concluded that the challenging factors occur at the macro, meso and micro levels but more importantly that these levels are interrelated and impact on one another, emphasising the complexity of the water and sanitation situation in the study school, but could most likely also be the situation at other schools in Malawi. Therefore multi-level interventions will have to be put in place to address these challenges.

Recommendations: The present study recommends that at macro level the Department of Education should provide an enabling environment and political will to facilitate development of a multi-sectoral approach that would complement the school operation rules to improve the adequacy of the water and sanitation facilities and hygiene practices. In addition, the Southern Region Water Board should ensure a reliable supply of safe water to the school and provide better infrastructure of piped water.

At meso level (school organisational level), the school management should take more responsibility for maintaining the infrastructure. In addition, the school-board, the school management and parents'-teachers' association and learners should form a committee to discuss and implement strategies that would enhance the learner's use of water and sanitation facilities at the school and ensure their privacy and dignity.

At micro level, the school, the communities including families and religious leaders should encourage personal hygiene practices repeatedly amongst everybody.

DECLARATION

I, the undersigned hereby declare that this thesis entitled, “*Exploring factors that influence learners’ use of sanitation facilities and personal hygiene practices in a girls’ boarding secondary school, Zomba district, Malawi*”, is my own original work which has not been submitted to any other institution for similar purposes. Where other people’s work has been used, acknowledgements have been made.

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Full Legal Name



Date: 20th November, 2016

DEDICATION

This work is dedicated to my late parents for having raised me to be what I am today though not tasting the fruits, May their Souls R.I.P. In addition, I dedicate this work to my husband, children, sisters, brothers and in-laws, may God bless them all.



ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my husband for allowing his and my salaries to be used for funding my research expenses and my studies. In addition, I am extremely grateful to my supervisor, Dr Suraya Mohamed of the School of Public Health at the University of the Western Cape for her commitment and dedication in supervising my work from the inception to the end of the project. Without her continued support, this work would have not reached this stage. Thank you Dr Mohamed for all that you have for me throughout my studies.

For data collection, I would like to thank the students and staff members at the study school for their assistance and cooperation during fieldwork. I would also like to thank the school authorities for allowing me access to the school, water sources, hostels, and the school compound where I collected all the required data and conducted interviews with the sampled individuals.

For data analysis, I feel greatly indebted to the Postgraduate Enrolment Throughput (PET) Program of the Division for Postgraduate Studies at the University of the Western Cape where I used to attend Saturday Seminars on qualitative data analysis sessions. In addition, I thank my supervisor for her critique and guidance on qualitative data analysis output.

Thanks to South-East Education Division (SEED) of the Ministry of Education located in Zomba City in Malawi for giving me permission to conduct my study as the chosen school after I presented them with my ethical clearance letter for University the Western Cape. Thanks to my colleagues and administrators at School of Public Health in Faculty of Community and Health Sciences of the University of the Western Cape for their support during my studies.

My heartfelt thanks go to my family members for their moral support especially, my husband, Dr Thokozani Kanyerere, for his encouragement. I salute my children, Jessie-Mzati, Alice-Mwanjiwa and Malumbo-Wapulumuka Kanyerere for their understanding about my role as a student. I sincerely thank them for enduring my absence when they needed me most as a mother.

ABBREVIATIONS

DPGS	Division for Postgraduate Studies
FGD	Focus Group Discussion
FPE	Free Primary Education
GOM	Government of Malawi
HSAs	Health Surveillance Assistants
IRC	International Water and Sanitation Centre
KAP	Knowledge Attitudes and Practices
LMICs	Low and Middle Income countries
MNSO	Malawi National Statistical Office
MNSP	Malawi National Sanitation Policy
MDG	Millennium Development Goals
MoEST	Ministry of Education Science and Technology
NGO	Non- Governmental Organization
SEED	South East Education Division
SRWB	Southern Region Water Board
SSA	Sub –Saharan African
UNESCO	United Nations Education Scientific and Cultural Organization
UNICEF	United Nations Children’s Education Fund
UNDP	United Nation Development Programme
UN	United Nations
WASH	Water Sanitation and Hygiene
WB	World Bank
WHO	World Health Organization

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CHAPTER 1: GENERAL INTRODUCTION

This chapter presents the background of the study, the study setting, the problem statement, the purpose of the study, study aim and objectives and outline of the thesis.

1.1 Background

The Millennium Development Goals (MDGs) are defined as the expression of the strong commitment to universal development and poverty eradication made by the international community in the United Nations (UN) Millennium Declaration (WHO/UNICEF, 2015). Millennium Development Goal 7 is to ensure environmental sustainability. The MDG 7 aimed to halve the proportion of people without sustainable access to basic sanitation and safe drinking water by the year 2015. The MDG 7 was replaced by global goal number 6 of the Sustainable Development Goals (SDGs) focusing on clean water and sanitation which aims at ensuring availability and sustainable management of water and sanitation for all (WHO/UNICEF, 2015). Sanitation in human rights terms is defined as access to, and use of, excreta and wastewater facilities and services that ensure privacy and dignity, ensuring a clean and healthy living environment for all (WHO/UNICEF, 2015). In addition, WHO/UNICEF (2014), define sanitation facilities as those that ensure hygienic separation of human excreta from human contact, such as flush toilets or latrine connected to a piped sewer system, a septic tank or a pit latrine, ventilated improved pit latrine, pit latrines with slab and composting toilet (WHO/UNICEF, 2014). In this study, adequate water and sanitation facilities will be regarded as facilities that ensure dignity when relieving oneself, preventing human contact with human waste and provision of safe water for personal hygiene.

Poor sanitation has a negative impact on human health (WHO, 2011). The Hesperian Foundation (2005) asserted that globally 3.4 million people, mostly children, die of diseases associated with poor sanitation every year and over half of the hospital beds are occupied by people suffering from sanitation related diseases. The World Health Organisation (WHO) (2011) estimated that 80% of all illnesses are due to poor water supply and sanitation, and account for 5 million child deaths each year. The authors' stressed that the global impact of poor sanitation is immense causing more than 875 million cases of diarrhoea diseases annually.

The 2011 United Nation Development Programme (UNDP) Human Development Report estimated that close to half of the people in developing countries suffer at any given time from poor sanitation related illness, with a negative impact on economic development due to absenteeism (UNDP, 2011). Furthermore, UNDP (2011) noted that poor sanitation contributes to the loss of 443 million school days each year due to illness among school going children. The report also cites data from developing countries for 2004 in which deaths from poor water and sanitation were six times greater than the annual global death toll from armed conflict in 1990.

In an analysis of data from 35 countries in sub-Saharan Africa, which hosts 84% of the region's population, WHO/UNICEF (2014) showed that over 90% of the households in the richest urban quintile benefit from improved sanitation, while access in rural areas falls below 50% even among the wealthiest households. According to the WHO/ UNICEF (2014) report, in the poorest rural quintile, over 60% of households practice open defecation as they have no access to improved sanitation facilities. According to the report rural-urban disparities in access to sanitation are even more pronounced than for access to drinking water. For example, in sub-Saharan Africa, about 72% of all those lacking access to improved sanitation live in rural areas, as do 90% of those subject to the high-risk practice of open defecation (949 million people) (UNICEF/WHO, 2014). Similarly, this situation applies to Malawi with over 85% of its approximately 17.7 million people living in rural areas and about 39.8 % of the rural population and 47.3 % of the urban population having access to improved sanitation.

Poor water, sanitation and hygiene conditions have many serious consequences (World Bank, 2013). The 2013 World Bank report, which drew on studies conducted in several countries, highlights the implication for health and the need for the renewed efforts towards behaviour change intervention (World Bank, 2013). Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases (WHO, 2016). Diarrhoea, worm infections, eye and skin infections are diseases related to inadequate water and sanitation conditions (International Water and Sanitation Centre (IRC, 2004). The IRC (2004) posits that good hygiene can help prevent much of these illnesses thereby saving lives and preventing illness. For example, it is estimated that washing hands with soap can reduce the risk of diarrhoea by more than 40%. Simple hygiene behaviours and practices are therefore key to improving health. Hygiene promotion must therefore be recognised as an essential part of water and sanitation programmes in schools if the maximum health benefits are to be

gained from provision of improved facilities (IRC 2004). For example, hand hygiene studies by WHO (2009) in African countries have indicated that children with proper hand washing practices are less likely to report gastrointestinal and respiratory symptoms problems. It has been observed that in situations where sanitation facilities are inadequate or absent in schools, hand washing is very crucial in terms of interrupting faecal oral disease transmission routes (UNICEF 2005).

Learners and particularly girls are denied their right to education because their schools lack private and decent sanitation facilities (World Bank, 2013). Girls and boys are likely to be affected in different ways by inadequate water and sanitation and hygienic conditions in secondary schools, and this may contribute to unequal learning opportunities (WaterAid, 2009). For example, lack of adequate, separate, private and secure toilets and washing facilities may discourage parents from sending girls to school (WaterAid, 2009). In addition, poor menstrual hygiene management in schools has been shown to cause adolescent girls concerns and humiliation, which contributes to absenteeism and poor performance of girls in schools (Lidonde, 2004; UNICEF, 2010; WaterAid, 2009). UNICEF (2010) stresses the importance of school toilets which are built to accommodate menstruating girls' specific needs for privacy, space, washing facilities and correct disposal or cleaning of menstrual pads. According to UNICEF (2010), an environment where these hygienic needs are met, can lead to improved girls' dignity and school attendance, thus improving their education and consequently the development of Malawi as a nation.

Although the MDG- Malawi Report (2012), estimated the use of improved sanitation to have risen from 54% to 68% globally, the access to improved sanitation continues to be a challenge in Malawi thereby slowing progress in the health and education sectors (MDG-Malawi report, 2012). In general, the sanitation situation in Malawi still lags far behind the MDG 7. Although Malawi has made significant progress in increasing access to safe water and improved sanitation in comparison to other Sub-Saharan countries, disparities in improved water supply and sanitation within Malawi remains a challenge. For example, only about 39.8% and 47.3% of rural and urban population respectively have access to improved sanitation facilities and about a quarter of all schools have improved latrines with a ratio of 1 latrine: 60 learners (WHO/UNICEF, 2015). Although noticeable progress has been reported in primary schools on water and sanitation situation, such progress remains unreported in secondary schools (MNSP, 2011), hence the basis for this study.

1.2 Description of study setting

This study was conducted in Zomba District, Malawi. Zomba consists of a combination of urban and rural areas, although more rural than urban. It has a total population of 699,234 of which 335,632 is under 15 years, representing 48% of the total population of Zomba (Government of Malawi (GoM), 2008). The main ethnic groups are Mang'anja/Nyanja, Yao and Lomwe. The dominant religion is Christian (78%) and Islam (20%). Zomba's main source of income is agriculture and fishing with low employment rates due to lack of industries. People receiving a regular monetary income only make up 6% of the total Zomba population, together with the group of self-employed represent only about 11% of Zomba population. From the remaining population, nine out of ten people have no regular income and rely on seasonal (agriculture) and casual income (Malawi Demographic Health survey (MDHS), (2008).

Zomba has 49 Primary Health Care Centres, one Mental Central Hospital and one Referral Hospital. The health personnel work with the Health Surveillance Assistants (HSAs). HSAs are mainly involved in preventive health services. Currently, HSAs are involved in community case management of childhood illnesses such as acute respiratory infections, diarrhoea and pneumonia. Services at this level are conducted through door-to-door visitations, village and mobile clinics and at health posts (GoM, 2008).

The major diseases in Zomba are tuberculosis, HIV/AIDs, malaria, cholera and diarrhoea. Safe hygiene practices remain inadequate leading to a high prevalence of water and sanitation related diseases in Zomba (GoM, 2008). For example, in 2011, 11% of the rural population suffered from diarrhoea due to poor water and sanitation conditions. Diarrhoeal diseases are the second highest cause of mortality (18%) of children under five. The high prevalence of water and sanitation related diseases contribute to poor health, loss of productivity, school dropout and deepening poverty (GoM, 2008).

This study was conducted at one of the boarding secondary schools for girls situated in Zomba district in the Eastern Region of Malawi. The district has 23 secondary schools, each with an enrolment of over five hundred learners between the ages of 11 to 18 years. Out of 23 secondary schools, 10 are boarding secondary schools, 4 for girls only and 6 for both boys and girls. The girls' boarding secondary school selected for this study had 516 learners at the

time that this study was conducted. It was opened in 1939 as a primary school. In 1961 it was registered as a National Secondary School for girls from both rural and urban areas of Malawi and became a full boarding school in 1971. It is one of the best achieving schools of Malawi School Certificate of Education results and more than 78 (58%) girls annually are selected to go to the University of Malawi (Ministry of Education Science of Technology (MoEST), 2008).

The reason that this school was chosen for the study was that the researcher has been a health educator at the school since 2010. Since joining the school, the researcher has observed poor water and sanitation conditions in terms of cleanliness, disposal of human waste, care and maintenance of water and sanitation facilities, and poor hygiene, and sanitation practices of learners and their limited use of available sanitation facilities in general.

1.3 Problem statement

A study conducted by UNICEF (2010) on water and sanitation in schools in Africa reported that in many boarding secondary schools the number of toilets and pit latrines were not sufficient to cater for all the learners. Others had no pit latrines to use as an alternative when there was no consistent water supply, and even if they did exist, they were not in a good condition. The report indicates that many boarding secondary schools in African countries had no sanitary bins for girls to dispose of their sanitary pads, no provision of menstruation pads or toilet paper (UNICEF, 2010). In most of these secondary schools, hand washing places were not sufficient and/or not in working condition. Other challenges included lack of maintenance of available sanitation facilities, inadequate sanitation facilities, coverage and inadequate promotion of hygiene and proper sanitation practices (UNICEF, 2010).

Similarly, inadequate sanitation has been found to be a major problem in boarding secondary schools in Malawi, especially since the introduction of Free Primary Education (FPE) in the mid-1990s (Malawi National Statistical Office (MNSO, 2010). As the FPE programme began to promote these learners into the secondary school system, it caused more problems to the sanitation situation because the number of sanitary facilities available in schools did not cater for the increase in the number of learners (MNSO, 2010).

Furthermore, the Ministry of Education in Malawi encourages and provides guidelines for adequate sanitation in schools, but no major changes have taken place since the guidelines. In addition, little is known about the practices, behaviours and challenges of girls' lived experiences and utilisation of the sanitation facilities in schools of Malawi (UNICEF, 2010). In Malawi, most studies that have been conducted on sanitation situations in schools have been done in primary schools and not secondary schools (MNSO, 2008). School girls in primary schools have fewer needs of special care and monitoring such as menstruation needs and sanitary care compared to secondary school girls, who are largely approaching adulthood. To date, studies in Malawi have not captured this population on this subject. Therefore, this study focused on factors that influence learners' use of the sanitation facilities and personal hygiene practices among girls in a boarding secondary school.

1.4 Research purpose

A study conducted by Fehr (2011), on sanitation in schools in Malawi, show that there is a need for more research to achieve the goal of safe sanitation. Furthermore, there is a dearth of information on the water and sanitation situation in girls' boarding secondary schools in Malawi. The purpose of this qualitative study was to provide a description of learners' practices and feelings, about the use of water and sanitation facilities and the challenges they identified concerning the water and sanitation situation at a girls' boarding secondary school in Zomba. It is hoped that the findings of this study will provide a better understanding of these factors and serve as a starting point for the recommendation of a policy brief for an intervention plan that would trigger interventionists such as non-governmental organisations (NGOs) and Government departments to put a plan in place to improve the water and sanitation conditions in girls' boarding secondary schools in Zomba and in Malawi generally.

1.5 Study aim

The aim of this study was to explore and describe the factors that influenced learners' use of sanitation facilities and hygiene practices at a girl's secondary school in Zomba, Malawi.

1.6 Study objectives

1. To describe the water and sanitation facilities at the school
2. To describe the practices of girls regarding the use of these facilities in the school

3. To explore the experiences and challenges the girls faced regarding the use of water and sanitation facilities in the school

1.7 Structure of the Thesis

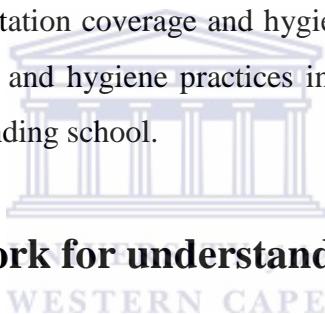
This thesis is divided into six chapters. Chapter one details the background of the study, setting, problem statement and purpose. It also discusses the aim and the objectives of the study. Chapter two presents a review of the literature on water and sanitation facilities. The third chapter describes the methodology of the study. The fourth chapter presents the findings of the study. The fifth chapter discusses the findings in relation to the literature of the study. The final chapter draws conclusions from the study and makes recommendations based on the findings.



CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The first chapter has provided the general introduction of the present study. The current chapter provides a review of relevant literature on what is known and what is not known about factors that influence learners' use of water and sanitation facilities and personal hygiene practices in school in general and in girls' boarding schools in particular water and sanitation facilities. The chapter firstly described the theoretical framework used for understanding sanitation in schools. The theoretical framework that shows how macro, meso and micro systems influence learners' use of sanitation facilities and personal hygiene practices in school is also presented. This is followed by a discussion of the literature on the global situation of water and sanitation coverage and hygiene practices. Finally the situation on water and sanitation facilities and hygiene practices in schools specifically is discussed including the impact on girls attending school.



2.2 Theoretical framework for understanding sanitation in schools

The theoretical framework that guided the present study is the ecological model. The ecological model was developed by Bronfenbrenner in 1974. The model is designed to draw attention to individual and environmental determinants of behaviour (McLaren & Hawe 2005). Bronfenbrenner (1994) argues that the behaviour of a person is viewed as being affected by, and affecting, multiple levels of influence. Bronfenbrenner (1999) defined the ecological model as a way of organising factors associated with complex social problems so that knowledge building can occur and intervention can be implemented at the appropriate system level.

There are four principles behind Bronfenbrenner's model (Fig 1). The first principle stipulates that there are multiple influences on specific health behaviours, including factors at the intrapersonal, interpersonal, organizational, community, and public policy levels. The second principle explains that influences on behaviours interact across these different levels. The third principle posits that ecological models should be behaviour-specific, identifying the

most relevant potential influences at each level. The final principle emphasizes that multi-level interventions should be most effective in changing behaviour. This suggests that to achieve good sanitation and hygiene practices in schools, single individuals like learners are unlikely to have power to change the poor sanitation and hygiene conditions that might affect schools. Based on the ecological model it is assumed that appropriate changes in the sanitation and hygiene conditions will produce changes in learners and that the support of family, peers, schools, community, providers and public policy is essential for implementing good sanitation and hygiene practices.

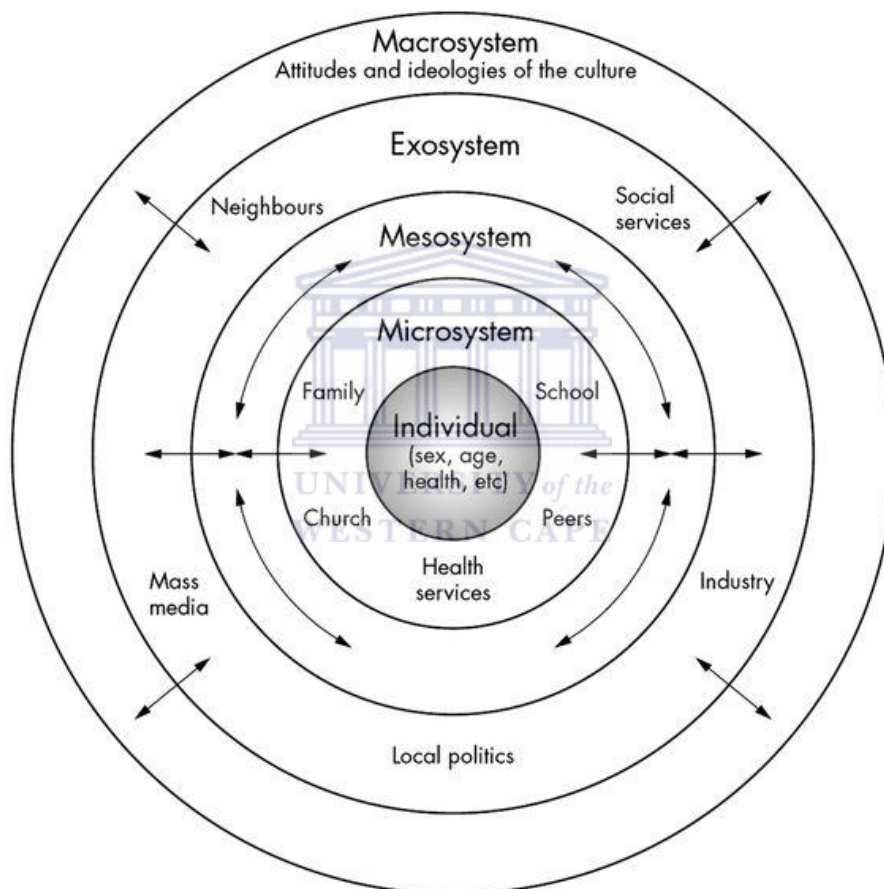


Figure 1: Ecological model for understanding sanitation in schools (Adapted from Bronfenbrenner in 1974)

The researcher used this model for guiding methods of data analysis and data interpretations. In its origin, the ecological model is used to depict interrelated systems at 1) micro-system level which has intrapersonal and interpersonal influence on an individual at family, school, peers, health services, church and individuals levels; 2) meso-system level which has community influence on an individual through school board, local politics, neighbourhood and social services 3) and macro-system which has national influence through policies,

laws, politics, economics, mass media which influences attitude and ideologies of the culture of people as illustrated in Fig. 1. Bronfenbrenner (2005) argues that the behaviour of a learner is viewed as being affected by and affecting multiple levels of influence. This model is applicable to this study because it provides a comprehensive framework for understanding the factors that influence learners' use of the sanitation facilities and personal hygiene practices in girls boarding secondary schools.

2.3 Global situation on water and sanitation coverage and hygiene practices

2.3.1 Inadequacy of water and sanitation coverage

Inadequate water supply and sanitation is a major cause of ill-health world-wide and improving sanitation is known to have a significant beneficial impact on people's health. Adequate sanitation is the foundation of development but it has been found that about half of the people in the world do not have access to toilets or latrines (WHO / UNICEF, 2015). In addition, the rate of those with access to improved sanitation facilities continue to lag behind rate of those with access to safe drinking water sources. For example, the 2015 WHO and UNICEF joint report showed that although 91% of the global population has access to improved drinking water sources, only 68% of the same population during the same period has access to improved sanitation facilities. The global pattern continues to show that inadequate access to safe drinking water and sanitation services coupled with poor hygiene practices kills and sickens thousands of people every day and leads to impoverishment and diminished opportunities for thousands more (WHO/UNICEF, 2015).

The 2012- Malawi MDG report estimated that the use of improved sanitation rose from 54% to 68% globally, but the target of 77% was not met, and has therefore been missed by 9% (MDG, 2012). While water and sanitation coverage has been advancing in many countries, recent estimates consistently show the sanitation component of the target to be significantly off track, with a projected shortfall of 550 million people in 2015 compared with what the target would require due to population growth (MDG, 2012). Whereas 35 countries in sub-Saharan Africa show that over 90% of households in urban areas benefit from improved sanitation services, less than 50% (35%) of households in rural areas have access to such

services (WHO/UNICEF, 2014). This situation confirms that sanitation coverage in Sub-Saharan Africa as part of the global family is inadequate.

2.3.2 Global situation of hygienic practices

Poor hand washing practices by school learners and the population in general is an important contributing factor to waterborne disease outbreaks in communities (Allwood, 2004). UNICEF (1994) and Brown, et al, (2013) noted that water scarcity contributes to illness through bad hygiene and this in turn fosters the spread of infections that affect the eyes, skin and the intestinal tract. According to the study carried out in Bangladesh by the International Diarrhoeal Diseases Research Centre, hand washing practices can cut diarrhoea diseases dramatically by 40% in the under-five age group, 20% in the five to nine age groups and by 10-15% in the other age groups (Clasen, 2015; Santosham, et al, 2010; Shahid, et al, 1996). Those who wash hands, food or eating utensils in unclean water are at risk of contracting typhoid, cholera, dysentery, gastroenteritis and hepatitis (World Bank, 2013). Therefore, inadequate sanitation conditions and poor hygiene practices play a major role in the increased burden of communicable disease within developing countries. For example, hygiene studies have indicated that learners with proper hand washing practices are less likely to report gastrointestinal and respiratory symptoms problems consequences (World Bank, 2013).

Global hand washing practices continue to face challenges regardless of its gains for improved human health when practiced. For example, hand washing with soap has been reported to reduce diarrheal morbidity by 44% and respiratory infections by 23% in Africa (World Bank, 2013). However, the global rates of hand washing practice with soap range from only 0-34% (Vivas, et al, 2010). The Global Public-Private Partnership for hand washing, which included several African countries, reported that only 17% of the participants washed their hands with soap after using the toilet, while 45% used only water (World Bank, 2013). Bhattacharya's study (2011) on hand washing practices in 250 households in Ichhawar and Astha in rural India showed that only 22% of people in Ichhawar and 62% of people in Astha practiced hand washing with soap and water after defecation respectively. Although the study did not elaborate on reasons for the disparity of the two areas, it highlights the differences with regards to water and sanitation practices that can occur even within a country and in similar contexts.

A cross-sectional survey conducted by Pang, Chua & Hsu (2015) in Singapore found that only 48.8 % washed their hands with soap before meals, and only 58.8 % washed their hands before handling food or cooking. In addition, 55.8 % and 61.3 % washed their hands with soap before and after attending to a child or sick person, respectively. The results showed that even though there was adequate accessibility and availability of well-established infrastructures such as proper sanitation and clean water facilities with soap, people still lacked good hygiene practises in communities due to the lack of knowledge of the importance of hand washing Pang, Chua, & Hsu (2015). This shows a challenge related to the knowledge of sanitation and hygiene in many developing countries such as Singapore. In a study conducted in Nyanza District in Kenya by O'Reilly et al. (2008) regarding safe water and hygiene intervention in schools, students' knowledge and parents' adoption of safe water and hygiene practices were assessed. The results indicated that there was improvement in students' knowledge and their parents regarding hygiene practices and that school absenteeism decreased in nine project schools by 35% showing how increased knowledge can lead to improved hygiene practices and the positive impact on children's education.

2.4 Situation on water and sanitation facilities and hygiene practices in schools

2.4.1 Inadequacy of water and sanitation facilities and maintenance in schools

In their 2006 State of the World's Children Report, UNICEF indicated that around 5.4 million school-going children worldwide did not have access to safe drinking water sources. This population therefore use unimproved sources for drinking water (UNICEF, 2006). The report further revealed that over 2 million school going children do not have access to a toilet facility. This lack of safe water and lack of sanitation services which resulted in poor hygiene practices were reported to be major causes of morbidity among school going age children. Furthermore, in line with the more recent observation of WHO & UNICEF (2013), the World Bank (2005) cautioned that schools that lack access to basic water supply and sanitation services will have an increased incidence of major illness among learners resulting in high absenteeism, poor classroom performance and early school dropout.

A comprehensive study which was carried out by Malawi National Sanitation Policy (MNSP) in primary schools in Malawi regarding adequate sanitation facilities and use showed that sanitation facilities such as toilets, rubbish bins and pit latrines were inadequate (MNSP, 2008). The MNSP study recommended that schools should consider increasing the number of toilets and other sanitation facilities against the number of learners likely to be enrolled to reduce sanitation related problems (MNSP, 2008). Although the study conducted by Pilliteri (2011) in Malawi showed that toilets seemed to be adequate in number in some schools, the same study revealed that most of them were blocked due to inadequate water supply and/or poor maintenance making such sanitation facilities inaccessible and thereby not adequate in reality.

2.4.2 Situation of hygiene and sanitation practices in schools

WHO & UNICEF (2014) reported that in the poorest rural areas of the world, over 60% of households practice open defecation. Grimason et al, (2014) reported that around 5.4 million school-going age children use unimproved sources for drinking water such as rivers, dams and lakes among others. These two practices are major risk factors for morbidity among the school going population. Curtis (2010) studied schools in Malawi on hand washing practices and found that hand washing with soap was associated with reduction in diarrhoeal and respiratory diseases. However, regardless of the knowledge and practice of adhering to using hand washing soap, the study found that soap was unavailable in many schools that were studied. In addition, the study found that although sinks for hand washing were available in boarding schools, taps were broken or stolen in addition to not having frequent running water from these taps (Curtis, 2010). This shows that despite having knowledge, their practices were influenced by other contextual factors.

UNICEF (2004) conducted a study in Malawi regarding school sanitation practices and hygiene promotion in schools in which learners reported that they washed hands after using the toilets (stool excretion) but not usually after urinating. They also asserted that they washed their hands before drinking from a tap or a hand pump. The report indicated that it was difficult for most learners to wash hands at school because of poor infrastructure such as lack of sanitation facilities, facilities not functioning properly for a variety of reasons like poor design or construction of the tanks, stolen or broken taps, or no easy access to water.

The report indicates that hand washing is practiced in schools but the limitation is the availability of facilities to ensure that such practices are carried out as desired or designed.

2.4.3 Learners' knowledge of sanitation and hygiene challenges

With regard to knowledge of sanitation and hygiene challenges, the RiPPLE study by Tefera (2008) in Ethiopia on promoting sanitation practices, found that there was some increase in knowledge of hygiene and sanitation practices of school learners, which they shared with their families. However, observations pointed to continued poor practices in hand washing and water storage and handling due to not knowing its importance. These results show that learners' increased knowledge does not necessarily lead to improved hygiene practices.

On the other hand, improved knowledge on water and sanitation and the associated hygiene practices can lead to improved human health. For example, a study conducted by Ngoma (2014) on sanitation in schools in Zambia observed that adequate knowledge, positive attitude and good practices played a vital role in disease prevention both at personal and community level. However, although a study by Sibaya and Gumbo (2013) found that the level of knowledge of learners on waterborne diseases was relatively high (78.45%), their knowledge on transmission routes was inadequate. The study indicated that the majority of the respondents had no knowledge when it came to waterborne diseases prevention (80.11%) suggesting the need for the continued awareness campaigns on waterborne diseases.

The study by Sibaya and Gumbo (2013) in schools in Vhembe District, South Africa found that the knowledge of learners on personal hygiene was high (91.40%). However, although learners knew the importance of using soap after toilet usage, there were no soap items in their hand washing facilities. Furthermore, although the microbial quality was unknown from the boreholes water, learners knew that clear borehole water was safe to use. Sibaya and Gumbo (2013) concluded that learners had good knowledge on hand washing practices although schools had inadequate hand washing facilities including soap items to improve their practice.

In most cases the improved knowledge on sanitation does not translate into implementing hygiene practices. For example, Vivas et al (2010) conducted a cross sectional study in schools in Ethiopia and found that 52% of learners had adequate knowledge of proper hygiene. Although 76.7% of learners reported that washing hands after defecation was

important, only 14.8% reported actually following this practice. These results suggest that mere knowledge on water and sanitation is not adequate if such knowledge does not translate into practice. This gap informs the purpose of the present study which is to explore factors that influence the use of sanitation facilities especially in schools with a focus on demonstrating the role of school as a setting in service delivery. Research demonstrates that internal and external contextual factors are critical to consider in the successful and sustainable implementation of school initiatives that intend to positively change learner's behaviour (Kam, et al, 2003; Weist, et al 2001). Durlak and DuPre (2008:344) indicate that: "... multiple ecological factors affect the implementation process" and therefore, the situation of water, sanitation and hygiene practices in schools also cannot be fully addressed if other systems that have an influence on the school such as socio-economic factors and the school environment itself, are not also considered.

2.4.4 Implications for girls of poor water and sanitation in schools

Poor school sanitation facilities have been cited as a factor that can impede girls' access to their education (UNICEF, 2005; Trinies, et al, 2015). According to WHO (2012) access to sanitary facilities is a fundamental right that safeguards health, humility and dignity. Providing these facilities in schools not only help to meet that right, it also provides the most favourable setting to encourage behaviour change in schools and community. Globally, the situation of water and sanitation practices in girls' schools is particularly challenging. Sommer (2008) reported gender-unfriendly conditions in schools in Kilimanjaro, Tanzania. For example, boys and girls were using the same pit latrine with different open wide doors which compromised privacy. Similar findings were reported in a cross-sectional study undertaken in Nigerian schools by Adinma & Adinma (2008). Lack of or inadequate facilities were also reported in a cross-sectional study conducted in Egypt among adolescent school girls (EI-Gilanya, Badawib & AL-Fedawyb, 2005). Ninety-seven per cent of the study participants complained about lack of sanitation facilities and privacy in schools for disposal and changing of sanitary pads. Only 6.7% of the participants (girls) reported that they changed pads in school.

Pilliteri's study (2011) in Malawi reports that boarding school girls usually go to their dormitories to change and to wash because classroom blocks do not have sanitation facilities to enable them to wash their menstrual cloths or pads (Pilliteri, 2011). Their knowledge on how to maintain themselves hygienically during their menstrual days is high but the facilities

to enable them to practice their knowledge are inadequate. For example, at night they wash their menstrual materials and dry them under their beds to ensure that they maintain good menstrual hygiene while at the boarding schools. In addition to lack of washing and drying sanitary materials, Pillitteri (2011) reports that in Malawi schools lack sanitary disposal bins and incinerators for girls to disposal their menstrual materials hygienically. This lack of sanitary disposal facilities results in girls keeping sanitary materials under their beds or in bags in order to dispose of them at a more convenient time (Pillitteri, 2011). This shows that learners had knowledge on hygienic practices on waste disposal but the challenge was the inadequate disposal facilities for learners to use.

A study conducted by Maluwa-Banda (2004) in Malawi noted that only 37% of girls' finish primary school education citing poor and inadequate sanitation infrastructures as one of the reasons for such a low school completion rate. For example, the study found that one of the schools had only one pit latrine for 485 staff and learners, a situation which led to overuse and unhygienic conditions thereby forcing learners to practise open defecation in the nearby forest. The challenge in this case was the inadequacy of sanitation facilities but not learners' knowledge about sanitation facilities and hygiene practices. Concurring with the studies by UNESCO (2010) and Maluwa-Banda (2004), the WHO (2010) confirmed that almost all schools in Malawi failed to meet the WHO guidelines of learners to toilet ratio of 1:25 for girls and 1:30 for boys (WHO, 2010) which can likely compromise girls' use of the existing facilities.

Snel (2004) in Ghana, UNICEF/IRC (2005) and WHO (2009) also showed inappropriate private and sanitary facilities for girls in schools. For example, most female learners usually have to stay out of school for between 4 to 7 days each month during their menstruation due to unhygienic or lack of gender friendly toilet facilities. This situation puts the girls at a disadvantaged position academically as they have to do extra work to catch up with their peers when they miss classes due to their monthly periods events (WHO/UNICEF, 2010; Snel, 2004; UNICEF/IRC, 2006; WHO, 2009). Burgher's (2000) study on factors contributing to school dropout among the girls in Malaysia observed that lack of privacy, facilities and poor hygiene affect girls entering adulthood more than any other school child because such girls need to have separate and adequate facilities for their menstruation time in school. Burgher (2000) concluded that improper facilities are the basis for girls' dropping out from schools.

In addition, Ten, (2007) in Zimbabwe studied gender-unfriendly school culture and infrastructure and the lack of adequate menstrual protection alternatives or clean, safe and private sanitation facilities for female girls in Zimbabwe and found that girls were disadvantaged because there were inadequate toilet facilities for them and felt insecure and that their privacy rights were not respected. Birdthistle et al (2011) who studied the factors for girls' drop out in schools, revealed girls' privacy issue in schools is foremost a factor which forces girls to drop out of school. Similarly, a study conducted in India reported that girls were absent from school during their menstrual periods when their school latrines lacked a door (WaterAid 2009). UNICEF (2006) indicates that in Africa, the lack of basic sanitation is the cause of decreasing enrolment of girls in secondary schools but girls spend more time in schools when sanitation facilities are adequate highlighting the importance of adequate water and sanitation facilities for girls in schools for furthering their education.

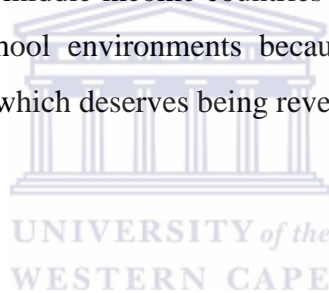
The maintenance and cleaning of water and sanitation facilities are the on-going challenges in many schools (UNICEF, 2002) and can also have a further negative impact on girls. For example, UNESCO (2010) reports that in 157 countries that were studied on progress about increasing girls' enrolment indicated that in many schools, girls are responsible for cleaning toilets. This task may lead to school drop out for girls due to the exposure to bad smell and cleaning other people's dirt. In another example, a school survey in Senegal found that boys cleaned the schoolyard and girls cleaned toilets. The girls explained that such a task made some of the girls not attend school regularly (Chatterley, 2014).

In Botswana a study by Heller (2009) reported that many schools had disposal facilities of solid waste but without water available which made it difficult for girls to manage menstrual hygiene in schools. In Zimbabwe, Moyo et al. (2004) reported that the disposal of menstruation waste in schools was not considered a priority issue and therefore the lack of incinerators or other suitable disposal facilities would force girls to flush their sanitary pads into toilet leading to blockages of sewer lines as was the case in the study by Dube (2012) in Zimbabwe. On the other hand, the lack of adequate ablution facilities and failure of toilet ratios to meet the government specifications of 1:15 squat hole per girls and 1:20 per boys were identified as challenges worthy addressing. The Moyo's study shows how the challenges of girls in schools are perceived by their societal values. In addition, Dube et al. (2011) in Zimbabwe reported that water rationing in schools is a limiting factor on the use

and maintenance of the toilets resulting in poor use of the facilities by the learners as toilets are often soiled and smelly.

Furthermore, reports from Australia, Mexico and Uganda indicate that inaccessible latrines are a barrier to disabled girls' education (Human Rights Watch, 2001; Groce, et al, 2011). While a study conducted by UNICEF (2011) on Equity of Access to WASH in Schools of Kyrgyzstan, Malawi, the Philippines, Timor-Leste, Uganda and Uzbekistan asserted that sanitation facilities have narrow doorways that do not allow children in wheelchairs to enter without crawling on the latrine floor. In addition, stairs or rocky pathways also lead to difficulty in entering or reaching the latrine.

To conclude these results show that the situation of water and sanitation practices world-wide in girls' schools are below the expected standards and needs improvement. For example, schoolgirls across many low and middle income countries (LMICs) struggle to manage their menstruation comfortably in school environments because of insufficient availability of resources in schools - a situation which deserves being reversed (WHO/UNICEF, 2015).



CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter describes the methodology used in this research study. It outlines the study design, study population and sampling procedures that were used. It also describes the methods and procedures for collecting data including research instruments that were used. The chapter further describes the data analysis process. Finally, the chapter addresses the issues of rigour and ethics that were considered for this study.

3.2 Research design

This study used a descriptive qualitative design. A descriptive qualitative study design provides a description of people's personal experiences of a phenomenon giving unique insight into their lived experiences (Creswell, 2013). By using this design in the current study, the participants had the opportunity to share their own experiences and perceptions regarding the water and sanitation situation at their school. Taylor & Bogdan (1984) state that qualitative research provides a thick description of social life which is directed towards understanding and explaining features of social life beyond the particular people and setting studied. It also has the benefit of a naturalistic approach, meaning that the researcher interacts with the participants and understands them in their natural setting (Geertz, 1973; Pope & Mays, 1995). This design was considered appropriate for the study because the focus was on describing and understanding factors that influence learners' use of water and sanitation facilities and personal hygiene practices in a boarding secondary school setting. The study was focused on factors including challenges that learners encountered and their feelings and practices regarding the availability and accessibility of the water and sanitation situation at their boarding school.

3.3 The study population

For maximum variation the study drew on five categories of the school community for the study population as follows:

- 1) Teachers who were responsible for sanitation and teaching Life Skills at the school.
- 2) The matron who was responsible for learners' welfare in the hostels.
- 3) Form 1 learners who were in their first year of learning at secondary school.
- 4) Form 4 learners who were in their last year of learning at secondary school.

5) Prefects who were leaders to the rest of the learners at the school.

This study population was selected because it was believed to be able to provide the necessary information needed for this study based on their particular sanitation experiences and perceptions at the school. This enabled detailed exploration and understanding of the central themes that emerged. It also examined the phenomenon from different perspectives.

3.4 Sampling procedure and sample size

Morgan, (2013) and Robson, (2011) recommend that in Focus Group Discussions (FGDs) the participants should be between six and ten in number so that the discussion can yield deeper insights on the subject under discussion. Based on this recommendation, the researcher chose six learners per FGD to allow for in-depth conversations with the participants. There were 2 FGDs which means there were 12 participants in total. For the individual in-depth interview with learners, 6 prefects were selected purposefully from 35 school prefects: 2 prefects who were responsible for water and sanitation-related matters, 2 health prefects, 1 dining prefect and 1 grooming prefect. These prefects were selected as all of them potentially were able to provide relevant information on the water and sanitation situation at the school. When the 6th prefect was interviewed, no new insights were forthcoming and the researcher decided to stop at that point as saturation was deemed to have been reached. This was in agreement with Fusch, et al (2015) and Burmeister & Aitken (2012) who state that the depth of the data is often more important than large numbers and that the small number of rich interviews or sources were more important than having many interviews which might reveal anything new data.

Purposive sampling was employed to obtain the required sample for the study. Purposive sampling is a method where researchers decide on their subjects, in terms of who in their judgment are important for the study and who will give the required information (Creswell, 1998). The researcher for this study purposively selected the required participants from the five categories of the study population as stated in section 3.3. In addition to the participants' suitability for the study, the researcher also considered their willingness to participate in the study. Considering these factors, 21 people were selected and constituted the sample size namely: one matron, two teachers, six form 1 learners, six form 4 learners and six prefects (see Table 1).

Table 1: Study population and study sample size

Study population	Purpose	Number
Teachers	In-depth interviews	2
Matron	In-depth interviews	1
Prefects	In-depth interviews	6
Form 1 learners	1 FGD (6 learners)	6
Form 4 learners	1 FGD (6 learners)	6
Total		21

Table 2: Sampling of learners

Form 1	Form 4
Class A 2	Class A 2
Class B 2	Class B 2
Class C 2	Class C 2
TOTAL	12

Recruitment of teachers and matron depended on their teaching subjects and responsibilities respectively. The studied school has thirty seven teachers and two matrons. The researcher contacted two teachers involved in teaching sanitation, health and life skills in the school and one matron responsible for sanitation to participate in this study. The researcher explained the study objectives to the matron and teachers and then asked if they were willing to participate. All three consented to participate in the study.

Teaching staff are employed by government and their role is only for teaching and not administration whereas the matron is employed by the mission (St Mary's = Catholic Schools) and her role is only for administration (looking after girls welfare) and not teaching in class. Therefore, by including both categories (teachers and matron) in the study the aim

was to see whether or not their views concurred or not with the views of learners given their different roles in the school. (This was part of triangulation to validate the findings).

Recruitment of participants included learners from Form 1 and Form 4 (see Table 2). Each form is made up of three streams (A, B and C). To obtain a sample of 12 learners, the school class registers in the six classes were used. In each class register, 2 learners' names were selected - the first and last names on the list of the learners to make a total of 12. Each of the learners was asked for their voluntary participation in the study and those who declined were replaced with the adjacent learner on the register list.

The inclusion criteria: The two teachers were included in the study because they were teaching sanitation and the Life Skills subjects. The Matron was included in the study because she was responsible for the girls' personal hygiene at school and she checks cleanliness in girls' hostels. Form 1 learners were included in the study because they were new-comers to the school so it was important to hear their challenges, feelings and new experiences at the school. On the other hand, the form 4 learners were included in the study because they were seniors and had been boarding at the school for four years so it was essential to understand their experiences, feelings and practices over the four-year duration from their perspective, which could possibly be different to the Form 1 learners who were still relatively new to the school. Prefects who were responsible for health, water and sanitation issues at school were included because they served as a bridge between fellow learners and teachers with regards to health, water and sanitation. The aim was to gain as wide a range of experiences and perceptions as possible from the learners as well as teachers and the matron at the school.

3.5 Data collection methods

In this section, individual in-depth interviews, focus group discussions (FGDs) and observations methods were used to collect data for this study.

3.5.1 Individual interviews

Individual interviews were used in this study to collect data from the sample of prefects, the matron and teachers. Individual interviews provided rich data and new insights which improved understanding of the issues studied and enhanced interpretation. Long & Johnson

(2000) and Patton (2002) have stated that during individual interviews, participants tend to share much more information during face to face engagement as it is much easier to ask follow-up questions and elicit examples to support what they are saying. This method gives people an opportunity to participate in a more direct way, which can result in greater buy-in for the findings of the research (Miller & Brewer, 2003). A face-to-face interview enabled the researcher to capture verbal and non-verbal signs such as body language. For example, in this study, shaking their heads indicated discomfort to some questions whereas lifting up their faces indicated a level of enthusiasm for some questions and nodding their heads showed that they were in agreement with issues or aspects being discussed in the interview.

3.5.2 Focus group discussions

The focus group discussion (FGD) is another method of collecting qualitative data. Morgan (2013) described a FGD as a research technique whereby data is gathered in a focused way through group interaction on a topic decided on by the researcher. In this research, FGDs were conducted with two groups of learners: one was with six junior learners and another was with six senior learners. Morgan, (2013) and Robson, (2011) recommend that in FGDs the participants should be between six and ten in number, the researcher chose six learners per FGD to allow for in-depth conversations with the participants. The reason for the separation into two groups for the FGDs was that the researcher felt the juniors were more comfortable having a discussion amongst themselves and would be more responsive to the researcher than in the presence of the senior learners. Usually FGDs encourage contributions from people who are either reluctant to be interviewed on their own or feel they have nothing to say on the topic. It increases the amount and range of data by collecting information from several people at the same time with the aim of obtaining a consensus on a subject from such a grouping (Gates & Waight, 2007; Robson, 2011). After collecting data from the sample of 21 participants, saturation had been reached because no new data was forthcoming. The researcher therefore did not feel the need for more data collection. This implies that the small numbers were in fact adequate to get a full account of the spectrum of issues that were explored. Saturation is the phase of qualitative data analysis in which the researcher has continued sampling and analysing data until no new data appear (Bowen, 2008).

3.5.3 Observations

The observation method provides direct access to the source of data by allowing the researcher to gain an insider's perspective. It provides the flexibility where a researcher can review and reflect on the data as it is being collected for deeper and richer understanding of issues as they emerge with regard to the context where such issues are taking place. It also provides first-hand information of actual behaviours as one observes the phenomenon (Mays & Pope, 2000). For example, this method enabled the researcher to observe the learners' hand washing practices, behaviours and non-verbal actions of their use of sanitation facilities as well observe the availability and accessibility of such sanitation facilities in their natural school environment.

3.6 Data collection tools and process

The researcher used semi-structured interview guides for the FGDs (Appendices 13-14) and individual in-depth interviews (Appendices 9-12). Miller & Brewer (2003) state that a semi-structured format of interviewing allows the participants to develop their answers in their own terms and at their own length and depth, but the researcher still has some control of the direction and focus of interview. The guide covered questions on description of the facilities, adequacy, availability and accessibility of the sanitation facilities, learners' hygiene and sanitation practices, use of the sanitation facilities and challenges learners face when using the facilities.

For the observations, using an observation guide (Appendix 15) the researcher observed hand washing practices among learners; their reactions as they visited toilets; their facial expressions when entering the toilets; their behaviours; non-verbal actions of their use of sanitation facilities; general conditions of toilets including disposal of sanitary related materials in the toilets; incinerators where learners dispose and burnt of their used pads; shower cubicles and finally the researcher observed some of the learners' practices while interacting with them at the school although the researcher did not use their facilities. This was one of the advantages of the researcher being on the staff of the school because it meant that she had an insider perspective as well. The researcher also made short notes when observing the learners'. She also took photographs of the water and sanitation facilities to support her observations.

Data collection took place from January to March during school term at the selected school. The interviews were conducted after learners attended their formal classes. The school hall was used for all the interviews and FGDs with permission from the school authority. The duration for each interview was between 40 and 50 minutes. The researcher collected all the required data personally in Chichewa language which is the national language of Malawi and the language that the researcher and participants are most conversant with. All the interviews and FGDs were audio recorded which the researcher later transcribed verbatim. The researcher translated the transcripts from Chichewa to English which were used for the analysis.

3.7 Data analysis

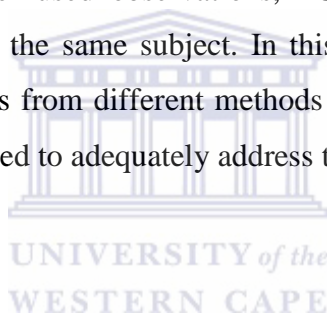
Thematic analysis was employed for this study. Thematic analysis is one of the most common forms of analysis in qualitative research (Greg, 2012). The use of thematic analysis is well suited to large amounts of data which is usually the case in qualitative studies enabling researchers to provide interpretation of themes which are supported by generated data. It emphasizes pinpointing, examining, and recording patterns or themes within data (Braun & Clarke 2006). Themes are patterns across data sets that are important to the description of a phenomenon and are associated to a specific research question (Daly, Kellehear & Gliksman 1997). The themes become the categories for analysis (Fereday & Muir-Cochrane 2006). Thematic analysis is performed through the process of coding in six phases to create established, meaningful patterns. These phases are: familiarization with data, generating initial codes, searching for themes among codes, reviewing themes, defining and naming themes, and producing the final report (Braun & Clarke 2006).

The analysis provided deep insights that enabled the researcher to understand the water and sanitation situation for the girls at the school. Such insights enabled the researcher to provide explanations with regards to the practices, perceptions and challenges facing the girls at the school. The researcher first familiarized herself with the data by reading the transcripts and listening to the recordings several times. Sections of data were then initially coded. Subsequently, textual data were merged according to their codes. Then categories were developed by clustering similar codes together to form themes. After that, themes were reviewed to check if they formed a coherent pattern or not. Where themes did not fit the patterns, data pieces were reorganised and the validity of each theme was checked. At the

end, data were integrated and interpreted using the tools and procedure as provided by the following authors: Dey (1993); Gibbs (2007); Green & Thorogood (2013); Robson (2011).

3.8 Rigour in qualitative research

Various aspects of rigour for this study were adhered to through trustworthiness or dependability aspects. This was done by asking similar questions to participants at different times to check the consistence of their responses (Brink, 1991; Creswell et al., 2000; Gibbs, 2007). The aim was to check if the different categories of participants provided similar responses on the same question. Triangulation was also used where different data collection methods were engaged as well as using different sources of information (Creswell, 2013; Denzin & Lincoln, 1994; Patton, 2002). Employing multiple data collection methods increases the credibility of the findings by eliminating or reducing errors linked to one particular method. The researcher used observations, FGDs and individual interviews to collect data from participants on the same subject. In this way, the researcher was able to cross-check or compare responses from different methods with different categories of study participants. Triangulation was used to adequately address the problem of rival explanations.



3.9 Ethics

Before commencing with the study, written approval was obtained from the University of the Western Cape Senate Research Committee (see Appendix 16) and verbal permission was obtained from the Head Office of the school on behalf of the Ministry of Education. Participants were informed about the duration of and requirements for participation in the study including their autonomy (free to withdraw from the study at any time without any negative repercussions), risks (no harm) and benefits (results/feedback) of participation in the study. Participants were informed that participation was voluntary and they were also informed about being tape recorded. They were ensured of anonymity in that no names and personal identity would be disclosed to anyone other than the researcher. Documents and data that included tape recorders and field notes and researcher's reflective notes were kept in a safe place as suggested by Malterud (2001) and Shenton (2003).

On confidentiality to participants, the study files were locked and protected by a password together with the laptop to which only the researcher had access. For the FGDs, the

participants were given a confidentiality binding form (see Appendix 7) to sign to ensure that information was not shared beyond the FGD. Parental consent forms (see Appendix 3) were sent to the Head Teacher (who served as parents abstentia) for consent for the participation of the learners as the learners were staying at the boarding school during data collection period. Those learners who were 18 years and over were also given consent forms to sign.

The study was conducted in the local language (Chichewa) and all forms were written in the local language to ensure that all the participants fully understood what the study was all about before giving consent. Only participants who gave consent/assent were allowed to participate. The researcher planned that learners were to be referred to a school counsellor if they felt that they had been affected by the research, but there were no such cases.

3.10 Limitations to the study

The paucity of previous studies on water and sanitation in secondary schools in Malawi meant that there were no clear benchmarks about practice, knowledge, feelings and challenges of inadequate water and sanitation facilities relating to boarding secondary school girls against which this study could be measured. However, this paucity speaks to the value that this study adds to existing knowledge and can be regarded as the strength of the study rather than a limitation. In addition, since this study was conducted in one girls boarding secondary school, the findings may not represent the same situation regionally, nationally or globally. However, the philosophy behind qualitative study is not to generate results that are representative of the sample but to develop themes and concept that can be generalised. Thus, the purpose of this study was not for generalisation of results but the research design was planned to collect and analyse data to provide useful insights on factors that influenced learners' use of water and sanitation facilities and hygiene practices in the selected boarding secondary school.

Another limitation was that the participants seemed hesitant in some of their responses presumably because they were aware that the researcher was a staff member at the same school which can be seen as a disadvantage of having an insider role as a researcher. To overcome this limitation, the researcher explained the importance of being honest in their responses right at the onset of the study when participants were being recruited and reiterated it during data collection as well as the benefits for themselves and the school if the recommendation of the study is heeded.

CHAPTER 4: RESEARCH FINDINGS

4.1 Introduction

This chapter presents the findings of this study which reflect participants' responses on water and sanitation facilities including access to water; water, sanitation and waste management facilities and infrastructure; and learner's hygiene and sanitation practices. Quotations are used to further illustrate the main issues that emerged from the perspectives of the participants which included FGD with Form 1 learners and Form 4 learners, individual interviews with Matron, Prefects, and Teachers.

4.2 Access to water

The following section describes the main and alternative sources of water at the school.

4.2.1 Piped water as main water source

The participants confirmed that the primary source of water to the school was piped water which is supplied by the Southern Region Water Board (SRWB). All regions treat their water to make it fit for drinking to prevent some water borne diseases. However, the participants admitted that it is common to experience poor water quality (colour changes due to turbidity) from time to time particularly when the water is disconnected. This mainly happens when the disconnection was for fixing some burst pipes in a particular area or when cleaning the water tanks.

The school in total has forty-nine taps for running water, in various locations in the school and used for different purposes. (See Table 3). However, there were barriers to accessing piped water at times due to non-functioning taps. For example, the Form 1 participants said:

“Twelve taps are not working, two from our toilet and the remaining ten from our laundry side” (FGD Form 1 learners)

Disconnection of water was another challenge experienced by learners in their daily routines. According to the participants, the supply of piped water to the school was erratic.

Table 3: Number of taps per located area

Located area	Used for	Total
Teaching area	Learners to drink during classes	4
Kitchen area	Chefs for when preparing learners' foods	2
Kitchen staff	Tea preparation during break time	1
Staff male toilet	Hand washing after toilet	1
Staff female toilet	Handing washing after toilet	1
Junior learners toilet	Hand washing after toilet	4
Senior learners toilet	Hand washing after toilet	4
Junior learners laundry	Washing clothes	16
Senior learners laundry	Washing clothes	16
Total		49

During the data collection period, the researcher observed that on average per week, water was disconnected one to two times for an unpredictable number of hours. When participants were asked whether or not such occurrences were normal, they said that:

“Such situation could be for more than two days in some months.” (Prefect 1)

All participants indicated that erratic piped water supply affected the use of flush toilets, personal hygiene and general sanitation of the learners at the school. The learners admitted that even when there was no water supply they still used such toilets without flushing which they said affect their hygiene practices and deteriorated the condition of the toilets as the Form 4 learners highlighted:

“While we attend lessons in classes, taps run dry or water just stops coming from the taps and we are forced to use toilets when there is no water to flush. Everyone uses the toilets during that time including those menstruating who might want to change their used pads go back to their respective classes without washing hands” (FGD Form 4 learners)

The irregular access to piped water also resulted in learners eating without washing hands as they had no access to water. Therefore, due to the unreliability of the SRWB as a service provider of piped water, the school used alternative sources of water.

4.2.2 Alternative sources of water

Alternative water sources at the school included: a borehole, two water tanks and a stream that crosses the school ground. However, according to the participants, the quality varied from time to time and access to these sources also varied from person to person. When learners were asked about access with regard to the alternative sources of water at their school, they said that they knew that borehole water and stream water were always available for use. However, they commented on the difference in the quality of the different sources of water as confirmed by the senior learners:

“The quality of tap water is better compared to the quality of borehole and stream water (FGD Form 4 learners)

They however, highlighted the challenges associated with using the alternate water sources because of their locations:

“Using stream or borehole water takes more of our time due to distance in addition to long queues at the borehole.” (FGD Form 4 learners)

Despite these challenges, they appreciated having alternative sources of water which they admitted was better than not having any access.

4.2.2.1 Borehole as an alternative water supply source

The school had a borehole as one of the alternative sources of water which was located approximately 300m away from the learners' hostels. The water from this source was used for bathing, cleaning their rooms, washing clothes, cleaning dishes and for cooking in the school kitchen when running water was not available. Learners queued to have access to the borehole in order of seniority, starting with the Form 4 learners and ending with the Form 1 learners. However, one prefect highlighted some of the challenges of the use of borehole water:

“We have one borehole which does not help everyone at one time. We have to wait in the queue which is time consuming. (Prefect 2)

There were further challenges highlighted regarding borehole water usage, with the junior learners' hygiene practices especially being compromised. The junior learners complained of the prevailing practice of giving seniors' learners first preference:

“Although the borehole exists at the school, it is not easy to access water from it because senior learners do not allow us to be in front of the queue to draw water before senior learners draw theirs first.” (FGD Form 1 learners)

They further explained how it impacted negatively on their personal hygiene:

“We just wait and wait behind the line at the borehole until it is time for classes, we give up and go to our classes without drawing water to bath ourselves and if it is in the evening hours, it gets dark and we just have to wait until the next day.” (FGD Form 1 learners)

The matron confirmed these challenges and said:

“Essh, when water stops, it becomes a problem for the 516 learners to access water and the amount of water that each one wants because there is only one borehole. As a result, some learners do not bath, not wash clothes as they wish, such situations compromise their personal hygiene in many cases” (Matron)

The learners also complained about the quality of the borehole water:

It (seems) water is not clean that we can use for washing white blouses and if one uses it for washing, the blouse turns yellowish in colour. (Prefect 2)

The poor quality of this source of water and its effects was confirmed by the senior learners:

“The borehole water smells of oil or grease-like and some learners got diarrhoea after drinking it.” (FGD Form 4 learners)



Figure 2: The only borehole at the school

4.2.2.2 Water tanks as alternative source of water supply

The school had two water tanks as another alternative source of water which was connected to the water board pipes. The aim of having water tanks was to reserve water that would be used for drinking by staff and learners when water was disconnected from the main source of the SRWB. However, the water tanks did not seem to be accessible to all the learners as the junior learners were again disadvantaged as indicated by the following quotation:

“We are not allowed to draw water from water tanks by school management for the reasons that we do not know but we think they think we will waste such water.” (FGD Form 1 learners)

Another difficulty was the inadequate water supply from the water tanks due to technical problems. The teachers and matron confirmed that the tanks did not function as intended:

“We do not know the exact problem of the tanks but when water stops from the taps, water tanks can only be used by few people before the water from the tanks also stops”. (Matron)

“The pressure in the pipes might be too low so water was not filling up the tanks.” (Teacher 1)



Figure 3: One of the water tanks at the studied school

4.2.2.3 Stream as alternative source of water supply

The stream that passes through the school was another alternative water source. The water from this source was used for cleaning, washing clothes and bathing. However, the learners and prefects claimed that the water quality was not good enough for consumption or for bathing:

“The water from the stream looks clean but is not safe to drink.” (Prefect 1)

“If we had to drink the stream water, we would suffer from abdominal pains and running tummies. Such illnesses could disturb our lessons.” (FGD Form 1 learners)

“Using the stream water to bath gave some of the learner’s skin problems.”
(FGD Form 1 learners)

In general, the learners were able to state differences on the potability of water from the three sources of water that the school uses. For example, learners from the senior FGD said:

“The tap water is the best for drinking because it is treated. The borehole is also safe to drink but the smell from it shows that it needs some treatment while the stream water although it looks clean but it is not safe to drink even for bathing and washing - it has potential to spread some diseases.”
(FGD Form 4 learners)

The learners were also aware of the relationship between poor water quality, poor sanitation and poor hygiene practices versus health outcome such as skin disease, abdominal pains and diarrhoea.

4.2.2.4 Participants recommendations for improving access to water

The participants had different suggestions for improving access to water. The responses from the teachers and learners suggested that the school management needed to take some responsibility which included an increase in the number of boreholes and water tanks and to improve water quality:

“The school management should have more boreholes to serve more learners at once and where possible there is a need to treat such water before learners’ drink or use it.” (Teacher 2)

“We are suggesting that the school management should buy more water tanks so that such water becomes adequate to all of us when we need it.”

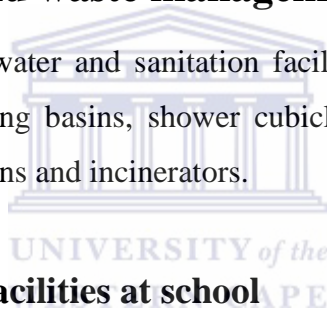
(FGD Form 1 learners)

With regards to improving access to water, the matron recommended that the SRWB take more responsibility:

“It is unfortunate that the SRWB is not accountable all the time because schools in general need to have running water all the time and especially schools with girls... I think the SRWB and schools need to find lasting solution on water supply and sanitation issue by establishing a working committee on water supply and sanitation” (Matron)

4.3 Water, sanitation and waste management facilities

The study found that available water and sanitation facilities at the school included flush toilets, a pit latrine, hand washing basins, shower cubicles and one laundry. Solid waste management facilities included bins and incinerators.



4.3.1 Available sanitation facilities at school

The school had one block of flush toilets for learners. There were eight cubicles of flush toilets; four for the senior learners and the other four for the junior learners which were used during school hours. In learners' hostels, the junior learners shared four cubicles of toilets and four cubicles of bathrooms; the senior learners had a similar number of facilities. This meant that one cubicle was used by forty-three learners. Participants in the senior FGD asserted:

“The number of cubicles is not enough and becomes dirty quickly and some of the toilets are not functioning that makes things worse.” (FGD

Form 4 learners).

From the researcher's observation, the conditions of these cubicles were not good for learners to use especially in the late afternoon. The toilets were cleaned once in the morning if there was running water and if there was no running water, the toilets were not cleaned. However, learners still using the toilets although the researcher observed that the learners did so with reluctance judging from the expression of disgust on their faces.



Figure 4: Pit latrine located behind Form 1 learners' hostel

A pit latrine is an alternative to flush toilet when water from the water board is disconnected as the flush toilets become dysfunctional. In such situations, the only available option was the pit latrine for all the learners at school. The school has one pit latrine which was located at the back of the hostel blocks for the Form 1 learners at a distance of 10m and much further for the Form 4 learners which was about 400m (See Figure 4). The Form 4 learners highlighted the implication of the distance to the pit latrines for their learning:

“The pit latrine is far from the senior hostels and classes which are about 400m that brings disturbances during classes.” (FGD Form 4 learners)

Most participants expressed their gratitude for having the pit latrine as an alternative to flush toilets. However, the learners highlighted some of the obstacles with regard to safety when using the pit latrine:

“The pit latrine that the school has is not connected to electricity which becomes difficult for us to use during the night. With grass around the latrine, we are afraid of snakes, mosquitoes’ dogs, cats and other reptiles in addition to fearing some unknown males who might rape us in such places” (FGD Form 4 learners)

These challenges were confirmed by the junior learners:

“When we need to use the pit latrine, we feel unsafe especially when one is alone because sometimes we feel that there might be thieves hiding

nearby such latrine at night. With no electricity in such a latrine, we suspect many different scary things at night.” (FGD Form1 learners)

“The latrine has a crack that might make the pit to fall any time which may harm one of us when is inside.” (FGD Form 4 learners)

From the researchers own observation, the pit latrine was not in a condition for safe use especially as the hole of the latrine was slanting backwards which learners admitted made them fearful of using the latrine (See Figure 5).

In addition to the above negative sentiments, one prefect added the lack of privacy as another challenge:

“The latrine had no door for learners’ privacy, so even during the day one feels unsafe.” (Prefect 3)

When participants were asked about their recommendations on the improvement of the pit latrine, some prefects emphasised the need for more and improved facilities:

“There is need for more pit latrines. The school should add two pit latrines, one for the juniors and the other for the seniors. Such latrines should have doors and at night learners should be accompanying each other.” (Prefect 5)



Figure 5: The only pit latrine at school for all learners

Another prefect also emphasised the benefit of more pit latrines for disposal of pads:

“The[more] pit latrines will also help to dispose of the used sanitary pads and solve dogs’ problem from taking pads out from the bins of flush toilets.” (Prefect 4)

4.3.2 Bathrooms facilities at school

The school had four shower cubicles for the seniors and four for the juniors’ hostels which had showerheads but no additional taps. The junior and some senior shower cubicles did not have doors compromising their privacy. Some senior cubicles had doors that were not attached to the walls so were just placed in front of the opening, which still posed a challenge for their privacy. (See Figure 6). When asked about privacy in shower cubicles for the mature learners when menstruating, one of the prefects responded:

“Some of the shower cubicles have no doors for learners’ privacy. We need shower cubicles with doors for privacy. We feel uncomfortable to shower naked in front of colleagues especially not matured learners. Worst still when we are in menstruation periods, we do not want others to see us cleaning ourselves in the shower cubicles.” (Prefect 3)



Figure 6: Shower cubicles in hostels at school

Aside from privacy, another challenge was the limited number of shower cubicles that impacted on their learning abilities as alluded to by the junior learners:

“We have few shower cubicles that make us to wake up around 3:00am to shower to avoid standing in the long queues and going late to class, but this practice makes us sleepy not focussing on studies when teachers are teaching us.” (FGD Form1 learners)

To the contrary, the matron and teachers asserted that the school had sufficient shower cubicles for the number of learners. The matron asserted:

“If the shower cubicles were not enough, the school management would have requested the [Education] Ministry to add some more showers. The fact that the school management is not doing anything means the shower cubicles are enough for learners.” (Matron)

4.4 Learners’ hygiene practices

4.4.1 Learners’ hand washing practices

The findings indicate that the hygiene practices of learners at the school varied. When asked about hand washing practices, there were differing opinions from the different participants seemingly with the senior learners washing their hands regularly compared to the junior learners as demonstrated by the following quotations:

“The general hygiene and sanitation practices of the learners are good at school because each time learners looked smart which is an impression that they practice good hygiene and take care of their bodies.” (Matron)

“There are many learners that do not wash hands even when there is running water. We have seen many of our friends not washing hands after visiting the toilet or before eating some foods or after eating some foods. However, before and after eating main meal during lunch and dinner time, they do wash their hands”. (FGD form 4 learners)

“Always we wash our hands.” (Prefect 4)

“We sometimes wash our hands.” (FGD Form 1 learners)

4.4.2 Disposal of solid waste

For the disposal of solid, the school had waste bins in each class and one incinerator for the disposal of sanitary pads. However, waste disposal did not seem to be adequate enough. During the data collection period, the researcher observed that the incinerator was overflowing and waste was strewn all around the area - an indication that learners did not come close enough to the incinerator for disposal of pads. This observation was confirmed by a prefect:

“We stand [a distance] away from the incinerator to throw the waste because it produces bad smell and pads are being scattered by wind and dogs.” (Prefect 3)

A twenty litre plastic bin is located in each toilet cubicle for disposing of used sanitary pads. Each day, these bins are meant to be removed by learners assigned to be on duty on that day and taken to the incinerator for burning (see Figure 7). The matron claimed that:

“Sanitary pads were burnt every morning for three reasons: to avoid bad smell and this promote good hygiene, for privacy so that people do not see them and for cultural reasons. Culturally, aspects of menstruation or such sanitary pads need to be destroyed immediately so that no one else sees them for fear of being bewitched.” (Matron)



Figure 7: Incinerators for disposal of sanitary pads at school

The senior learners confirmed this. However, there was some difference in opinion about the regularity of disposal of used pads. Contrary to the matron and senior learners, the junior learners in their FGDs posited:

“Sanitary pads are burnt three times a week. We are assigned to do so by our seniors. We follow the schedule that was designed by our matron and senior learners.” (FGD Form 1 learners)

From the researchers’ observations of the school time tables, both senior and junior learners were responsible for waste disposal but it was only the juniors who actually disposed of the soiled pads waste as confirmed by the juniors earlier. From the researcher’s observation, toilet bins were not covered for learner’s privacy and bad smell which learner’s confirmed compromised the poor hygienic conditions in the toilets. (See Figure 8)

The participants also commented that the school did not provide sanitary pads. This had negative repercussions for those who could not afford to buy pads. They had to use cloth which then had to be washed which was not always possible when there is irregular access to water.



Figure 8: Toilet cubicle with sanitary pads in a flush toilet at school

One prefect pointed out:

“At this school we don’t receive sanitary pads. Those who cannot afford pads we advise them to use old pieces of cloths then they fold like a pad. Though the problem comes when they want to wash and dry.”

(Prefect 3)

When the researcher questioned further on how and when learners dry and wash the materials that they had used as their sanitary pads, senior learners claimed:

“They washed their used menstrual cloths at night and dried them under their beds. When going to classes they carry spare cloth for change in their heavy days. When changed they hide in their school bags as our hostels are kept locked until lunch hour.” (FGD Form 4 learners)

4.4.3 Cleaning of sanitation facilities

The matron and prefects asserted that the toilets were cleaned according to the duty roster provided by the school management in agreement with the school prefect body. One prefect explained:

“Toilets and hostels are cleaned every morning when there is running water.” (Prefect 2)

However, during the FGD with the junior learners, it came to light that the poor hygiene practices of some of the girls left the condition of the toilets in an unhygienic state:

“I feel so sad to talk about the practices of some girls who use cubicle (toilet) walls as tissues because there is lack of toilet papers, then they wipe their hands on the walls. This leaves the toilets walls in poor state.” (FGD Form1 learners)

There was also an indication that some learners did not take responsibility for their assigned tasks which had an impact on the prefects’ relationship with them:

“Firstly each learner has a specific place to clean, but some learners do not come to do their work. Sometimes I feel sorry for the prefects the way

other learners react when asked about why they are not doing their work.” (FGD Form 1 learners)

4.5 Summary of Findings

The study found that there were different factors that influenced the learners’ use of the sanitation facilities and hygiene practices at the school. One of the main challenges was access to water as there was erratic supply of water. However, it was revealed that the school had a borehole and a small stream as alternative sources of water although water from these sources was not always potable because of poor quality. The other challenge which emerged strongly was the inadequacy of the sanitation and hygiene facilities which compromised learners’ maintenance of proper standards of hygiene. The lack of doors to shower cubicles also infringed on the learners’ right to privacy especially during menstruation. Furthermore, the study found that the number of toilet cubicles was insufficient for the number of learners and only one pit latrine for all learners as an alternative when there was no running water. The school has an incinerator for disposal of pads and dust bins for waste disposal but which are not optimally used. The study also found that junior learners woke up around 3:00 am to shower before the senior learners arrived as they then took priority for showering. Furthermore, the juniors were not allowed to draw water from the borehole before senior learners if piped water was not available. The water and sanitation facilities were also not maintained as was meant to be. All the above factors were found to compromise the learners’ optimal use of the sanitation facilities and hygiene practices at the school.

CHAPTER 5: DISCUSSION

5.1 Introduction

This chapter presents the discussion on the major themes that emerged from the findings in relation to similar studies conducted in other countries as identified in the literature. The discussion is focused around inadequate access to safe water for improved water use and sanitation in schools; the impact of inadequate provision of water and sanitation facilities and poor infrastructure on the learners; and the learners' hygiene and sanitation practices. The findings are also discussed in relation to the Ecological Model of Bronfenbrenner (1994) as a framework to understand how factors at macro, meso and micro levels influence learners' use of sanitation facilities and personal hygiene practices in girls' boarding schools, in particular using the studied girls' school in Zomba District in Malawi as an example.

5.2 Inadequate access to safe water for improved water use and sanitation in schools

The findings indicate that there was water available at school through different sources but water was not always accessible to everyone. The main source of safe water was piped water but was not reliable due to regular disconnections by the SRWB management hence affecting its accessibility. The unregulated disconnections of water disrupt the learners' general sanitary use and hygiene practices which in turn disturbs punctual class attendance. The irregular supply of safe water does not only apply to this school, but appears to be a general phenomenon in Malawi (UNICEF, 2010). For example, about 4 million people in Malawi were without access to a safe water source due to increasingly non-functional water points, aging water systems, and high levels of non-payments of water bills, a rapidly growing population, poverty and low cost recovery within the utilities (USAID, 2015). Only 65% of Malawi's population have access to improved water sources and 2% have access to piped water inside their dwellings most of which are located in the urban areas. The report on the MDGs regarding Malawi indicates a gross lack of accomplishment of the MDG 7 as more than 6 million residents have no access to sanitation (USAID, 2015). In general, Malawi is characterised by a high level of poverty, high population growth, significant gender inequalities and frequent environmental challenges such as floods, droughts and deforestation among others (MDG, 2010). Malawi being one of the poorest countries in the world, it

continues to be a donor dependent country and hence investment in social services such as water supply and sanitation in schools remains extremely limited and donor contributions continue to dwindle despite the increasing need for such donations to support social service delivery (UNICEF, 2014).

The reviewed literature has shown that in Malawi, 31% of schools use drinking water which tested biologically unsafe (WASH, 2008) and that one out of every three schools in the country use unsafe drinking water (MoEST, 2009). The Malawi National WASH program in schools' report (2008) indicated that there is a need for the Ministry of Education to construct about 1,000 boreholes, more than 8,000 hand-washing facilities and 37,000 latrines in more than 4,000 schools in order to reverse the current adverse water and sanitation situation. However, to the researcher's knowledge nothing has happened to date. Without addressing water, sanitation and hygiene-related problems, the implication is that children's rights to adequate standard of living, education and the highest attainable standard of health cannot be fulfilled thereby compromising achieving their desired health and development outcomes.

The global pattern shows that inadequate access to safe drinking water and sanitation services coupled with poor hygiene practices, high morbidity and mortality leading to impoverishment and diminishing peoples' opportunities for growth (WHO/UNICEF, 2015). While water and sanitation coverage has been advancing in many countries, recent estimates consistently show the sanitation component of the target to be off track, with a projected shortfall of 550 million people in 2015 (MDG, 2012). Whereas 35 countries in sub-Saharan Africa show that over 90% of households in urban areas benefit from improved sanitation services, less than 50% (35%) of households in rural areas have access to such services (WHO/UNICEF, 2015). This situation confirms that sanitation coverage in Sub-Saharan Africa is inadequate, thereby suggesting the need to review existing policies and developing new programs that need to be implemented to scale up sanitation coverage in such countries. This demonstrates the need for an enabling environment which has to be created at the macro level as posited in the ecological model (Bronfenbrenner, (1994). These factors are beyond the learners' control, but would influence learners' use of water and sanitation facilities and personal hygiene practices in general communities, in schools and in girls' schools in particular at the micro level as the findings of this study shows.

The findings of the current study indicate that access to the available water source at the school was not sufficient. One of the major findings was that the number of toilets and shower cubicles were insufficient because the learners' population outnumbered the shower and toilet cubicles that were available. In addition, the study showed that learners were waking up around 3:00 am in order to access safe water for their personal hygiene. Learners reported that they queued for a long time at the water source to access safe water for their personal hygiene and sanitation. Similar results were reported in a study conducted by WHO (2012) in developing countries including African schools with regard to progress of drinking water and sanitation. Long waiting times to access safe water has multiple negative effects including potential to influence learners to use unsafe water sources which are risky for water-related diseases such as diarrhoea and accounts for high morbidity and mortality among the young people world-wide (GoM, 2008; WHO, 2012).

The findings in the current study, also suggest that learners waiting in long queues early in the morning meant that they were spending more of their sleeping hours queuing for water and were not having sufficient sleep. In the field of sleep and wakefulness, Alhola and Polo-Kantola (2007) found that sleep deprivation induces adverse changes in cognitive performance. For example, total sleep deprivation impairs attention and working memory, long-term memory and decision-making. In this study, inadequate water and sanitation facilities and arrangements led to partial sleep deprivation which made learners feel tired during classes resulting in them not being attentive in classes and therefore could impact on their academic performance. Although the present study did not assess the impact of sleep deprivation on academic performance, such a situation highlights the impact of inadequate access to water and sanitation for the girls in girls' boarding schools in particular.

The implications of having inadequate sanitation facilities in schools have been further reported. For example, UNICEF (2002) reports that over 1, 200 school learners died because of poor sanitation conditions at school during the 1997 cholera outbreak in Uganda and 560 primary schools around the country were closed. If no appropriate measures are taken to build more toilets and improve sanitation conditions for example, in Malawian schools, learners are likely to develop water-related diseases as was the case in Uganda 1997 (UNICEF, 2002).

The inability of the school to provide more sources of safe water is the likely cause for inadequate access to safe water sources. However, during the interview with the school teachers and the matron, it was discovered that it was the responsibility of the school board to lobby with the city council through the South East Education Division if the need to provide more safe water sources was deemed priority for the school's activities. Although the responsibility for providing sanitation facilities or infrastructure is with the Ministry of Education, the responsibility for maintaining the facilities in schools for the wellbeing of the learners lies in the hands of the school board and PTA. Therefore, this aspect is beyond the learners' capability. This study shows how the role of the school board which can be classified as meso level in the ecological model, can influence learners' use of water and sanitation facilities and personal hygiene practices in schools generally and in girls' schools in particular.

Apart from the situation at the school in the current study, WHO/UNICEF (2013) claimed that around 5.4 million school-going age group worldwide do not have access to safe drinking water sources and use unimproved sources for drinking water. The report further revealed that over 2 million school going children did not have access to a toilet facility. This lack of access to safe water and sanitation services were reported to be major causes of morbidity among school going age children. Such findings suggest that the intervention to improve access to safe water should be at macro level through appropriate policies or programs for the implementation of proper infrastructure.

5.3 Impact of inadequate provision of water and sanitation facilities and poor infrastructure on school girls

The current study revealed that the school did not provide sanitation and hygiene -related materials such as toilet papers and sanitary pads for girls. Learners were expected to bring their own. However, the school's failure to provide these materials compromised or impacted negatively on the personal hygiene of girls in general and those menstruating in particular.

Apart from provision issues there were also challenges related to disposal of sanitary pads. Although the school has an incinerator for disposing of sanitary pads and menstrual-related materials to promote personal hygiene, the school had no regulated and monitored system to enforce girls to dispose their sanitary materials in the incinerator. As a result, some girls were

reported to be disposing of their sanitary materials in toilets, a situation which led to the reported blockage of the flush toilets.

Previous studies have shown similar sanitation related problems with girls in schools. For example, the study by WaterAid (2009) in Malawi showed that the flush toilets were blocked with sanitary pads or newspaper as there were no toilet papers in any of the studied schools. Furthermore, Dube et al (2011) in their study in Zimbabwe concluded that mature girls in many schools remain challenged due to limited access to safe sanitation facilities for their menstrual pads disposal leading to toilet blockages, suggesting the need to study sanitation challenges in a comprehensive manner. A study by Pillitteri (2011) in Malawi reported that there was lack of incinerators for girls to dispose of their menstrual pads hygienically in the studied schools. In Zimbabwe, Moyo et al (2004) reported that the disposal of pads in schools was not considered an issue that deserved special attention. This report explains the inadequate facilities for disposing of pads. Hence girls' menstrual hygiene was not seen as a priority by the school.

The pit latrine is another challenge for the learners in the current study. The study found that the school had only one pit latrine which had to be used by 516 learners when the flush toilets were not functioning, thereby failing to meet the required WHO guidelines in terms of toilet/learner ratio in schools which is 1: 25 for girls and 1:30 for boys. Previous studies have shown similar findings in Tanzania, Nigeria, Egypt, and Uganda where 700 learners were using one pit latrine and in Kenya one pit latrine was being used by 400 learners (Rugumayo, 2002; Sommer, 2008). For example, in some schools in Malawi, 485 learners and staff shared one pit latrine (Maluwa-Banda, 2004). This situation requires policy intervention at ministerial level although the school board can also initiate small interventions at school level such as requesting the parents-teachers' association to rally to contribute funds that can be used to provide more pit latrines.

In addition, the study also found safety issues in relation to the pit latrine. The pit latrine at the study school was not connected to electricity, which the learners perceived as unsafe for them to use at night. Furthermore, the toilet had a slanted floor with open doors all the times meaning that the poor infrastructure made it risky for girls including compromising privacy and dignity. The Human Rights Watch (2001) has reported girls' concerns about insecurity of latrines/toilets as a place for potential sexual abuse. However, the present study did not

investigate incidences or cases of sexual attacks related to the pit latrine but other fears such as thieves, snakes, and dogs were acknowledged by the learners.

The unhygienic condition of the pit latrine in the current study could likely be a risk for infection as the WHO (2010) observed that the unhygienic conditions in toilets was one of the risk factors for infections as users' private parts came into contact with such conditions. Furthermore, the pit latrine in the current study had no doors for learners' privacy making it a challenge for use especially during the day too. A study by UNESCO (2010) in Malawi showed that many girls did not finish their primary schools due to inadequate sanitation facilities such as pit latrines. However, whether or not the poor sanitation facilities in schools such as pit latrines contribute to learners dropping out of school was not investigated in the present studied school.

A study in Nepal by Fernandes (2008) observed regular absence of girls from school while menstruating. It was found that schools were unable to provide privacy for cleaning and washing on the days when female learners were menstruating (Fernandes, 2010; WaterAid, 2009; WRC, 2011). Similar findings were reported by Mutunda, Stern & Cooper (2013) in Zambia when factors impacting menstruating girls in school were studied. Results showed that lack of bathing facilities deprived girls of privacy during the menstruating periods hence they stayed away from school during such periods. Other studies in sub-Saharan Africa reported similar findings on inadequate water and sanitation facilities in schools which impacted on girls' school attendance especially during their menstruation periods (Quest, 2001; Sommer, 2008; Sommer, 2009; Sommer, 2010; Stewart, 2004). Although school attendance was not an issue in the current study as it is a boarding school so the learners are on the premises, the lack of privacy and poor water and sanitation facilities as highlighted by the studies above, still applies to the current study.

The school's failure to provide sanitary materials can be regarded as a negative influence of the meso level (school) whose responsibilities include maintaining sanitation hygiene by supplying sanitary related materials such as toilet papers. On the other hand, the behaviour of girls disposing their sanitary pads in toilets when an incinerator was available for disposing such materials can be classified at the micro level behaviour which originates from knowledge, practices, relationship and interaction with either the family members at their homes or peers at school.

5.4 Learners' hygiene and sanitation behaviour

5.4.1 Poor hand washing practices among learners

Studies have confirmed that regular hand washing has the potential to prolong life expectancy among learners WHO (2009) and World Bank (2013) by reducing their chances of getting infectious diseases among others (Curtis, 2010; Plyushteva (2009). However, the present study showed that the practice of hand washing varied from some learners not washing hands after using the toilet and before eating even when water was available to learners always washing hands before after eating. Previous studies on hand washing practices have shown results similar to the findings of the present study. For example, studies on hand washing practices in primary schools in Malawi by Grimason et al, (2014) and Curtis (2010) showed that hand washing practices were poor. Furthermore, a UNICEF (2010) study in Malawi found that 16% of rural primary schools had hand washing facilities in use but 81% of rural schools do not provide the learners with any facilities for washing hands.

The hand-washing practices in the present study school are a basis for concern with regard to learners' health outcomes. These hand washing practices can be used as a basis for designing, implementing, monitoring and evaluating small scale solutions at school level. Such strategies can start with increasing awareness of the importance of washing hands among teachers and learners using the learners' existing school clubs and societies on health and education at school. Findings from the present study showed that learners were knowledgeable about the relationship between poor water quality, poor sanitation and poor hygiene practices versus health outcome. Despite such knowledge among learners, their hygiene practices were erratic meaning that learners failed to implement what they knew about water, sanitation and hygiene practices.

The RiPPLE study by Tefera (2008), in Ethiopia on promoting sanitation and hygiene practices, found that learners had increased knowledge on sanitation and hygiene practices which they shared with their families. However, poor hygienic practices with regard to hand washing were still reported and observed because the learners did not know the importance of implementing such practices.

Similarly, a cross-sectional survey conducted by Pang, Chua, & Hsu, (2015) in Singapore, showed that even though there was adequate accessibility and availability of well-established

infrastructure such as proper sanitation and clean water facilities with soap, people still lacked good hygiene practices as they did not perceive the importance of washing hands. Although the present study did not use cross-section research design similar responses were obtained during focus group discussions where participants reported that some learners did not wash hands when necessary even when water was available and accessible at school taps.

The present study did not focus on hand washing practices with soap, with water only or hand washing after using toilet as in some other studies, but the findings were similar to other studies in that hand washing practices were erratic and even poor among some learners. There were differences regarding water and sanitation practices among learners, a situation that can occur even within families, communities and schools of similar environments/settings.

5.4.2 Practices that highlight inequity between junior and senior learners

The present study found that there was unfair treatment of learners amongst the learners themselves. For example, junior learners were seen as inferior to senior learners in some aspects. In many cases, senior learners insisted that they have access to water first even if junior learners arrived at the borehole first. This practice meant that junior learners had to wait for a longer time than planned for them to have access to water as they had to give priority to senior learners. With insufficient water sources at the school and frequent disconnection of running water, it limited the junior learners' access to the already limited availability of water and this can be seen as denying their basic rights. Such practices can also be understood as bullying of the junior learners by the senior learners. Rigby (2003) argues that with age there is some shift away from physical bullying, toward indirect and relational bullying which is what appeared to be happening at the school in the current study. Therefore, measures to reduce bullying in Malawian schools need to be taken. For example, a study in Australia showed that over 70 schools learners claimed to have been being bullied and as a result stiff school policies were implemented with the purpose of protecting vulnerable learners, especially juniors, from being bullied or harassed (Seals, et al, 2003). Furthermore, the United Nation Convention on the Rights of the Child, states that every school learner has equal rights and such rights need to be protected (UNICEF, 2006) which did not seem to be happening at the current school.

It was also reported that sometimes junior learners were being sent to dispose of menstrual pads of senior learners. Requesting junior learners to dispose of or burn the menstrual pads of senior learners was not only unfair and unhygienic but also culturally inappropriate especially because most of the junior learners were likely not menstruating yet. House (2012) concluded in his study that women's menstruation was seen as taboo and secrecy in African culture. Similarly, Mutunda, Stern & Cooper (2013) in their study in Zambia confirmed House's (2012) findings that African cultural practices and beliefs prevent girls of pre-menarche age and men to know issues of menstruation or see menstrual blood because is a taboo. Therefore, the senior learners sending junior learners to dispose of menstrual materials can only be understood as inappropriate because they are exposed to something that they are still meant to know nothing about because it might be traumatic for them.

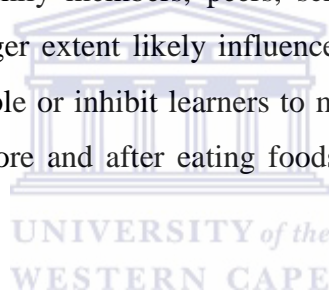
The present study suggests designing, implementing and monitoring and evaluating strategies at school level to eliminate the continued violation of the basic rights of junior learners. Although the present study was not directly about the human rights of learners nor about African cultures, the findings of the current study revealed insights that require further exploration in this area as it can be regarded as a public health concern. The study also demonstrates how the application of ecological model used in the present study might be useful in the design of such an intervention that could be feasible at school level.

5.5. Application of Ecological Model

The implication from the findings of the present study suggest that the three levels in ecological model of Bronfenbrenner (1994) need to be understood in terms of how interactions and, inter and intra relations influence operations at school level (meso level) and individual level (micro level) in clarifying factors that influence learners' use of water and sanitation facilities and personal hygiene practices in girls' boarding schools in particular. For example, facilities in schools such as water sources, toilets, waste disposal sites and incinerators are the responsibility of the Department of Education (macro level). They need to build adequate facilities in schools in accordance with the population size of such schools and provide the required facilities to promote the health of those in the school. These facilities can be part of school design plan when such schools are being constructed. However, the provision of soap items, toilet paper tissues or sanitary pads in schools is the responsibility of the school (meso level). The school through the school board can discuss with parents,

community members or the Department of Education on initiating small solutions at school level to ensure that such materials are sourced and provided to learners for use.

However, improving the reported poor hygiene practices among learners is also the responsibility of the learners themselves who might fail to learn from their teachers, parents, peers at school and in communities or their families (micro level). Therefore, solutions should be developed based on the insights of the girl learners themselves as Kirk and Garrow (2003) point out they are “knowers” of their own lives, of the challenges they face and of possible solutions for these. Nevertheless, sustained support provided to learners in a collaborated and participatory manner from key stakeholders is required. Bronfenbrenner (2005) observed that the behaviour of learners is influenced by multiple levels of systems whereby the micro system is viewed as the main influence on their displayed practice even in schools. For example, the interactions within and outside their families, within and outside their communities with their family members, peers, school mates, community members including teachers have to a larger extent likely influenced their attitudes, perceptions and behaviours. Such influences enable or inhibit learners to make decisions such as whether or not they should wash hands before and after eating foods, before and after visiting toilets among others.



Applying the three classifications it can be argued that the poor hand washing practiced by learners in the present study was influenced by interactions and interrelationships from individual (their own perceptions), interpersonal (from families and peers), organizational (from schools), and community norms and values. Based on the application of the ecological model, it can be concluded that learners’ poor hand washing practices were attributed to internal and external causes and inter and intra relations of multiple systems. Therefore, interventions into such poor hand washing practice especially in schools require understanding the influence of such multiple levels to lobby for change in policies and programs which can inevitably influence behaviour change in learners. One feasible intervention may include programs that target families, schools and other organisations in communities to lobby for policy change and better implementation of quality infrastructure in schools.

White (2015) and White et al (2013) highlight the importance of drawing upon the ecological model in addressing health issues of a nation's population as crucial to the strategic alignment

of policy, programs and services across the continuum of population health needs. The macro level in ecological model informs the designing of effective health promotion and disease prevention and control strategies. Having overarching policy framework that aligns school policies, programs and services facilitates the operation of health-related services across the spectrum from primary prevention to long term care and end-stage conditions in schools. The findings by White (2015) suggest that there is a need to scale up the current study in many schools of Malawi for a consensus building to inform a basis to lobby for policy reform that will facilitate developing integrated interventions and monitoring water and sanitation programs in schools.

In this case the ecological model is relevant and appropriate in providing useful insight for developing not only individual-community responsive intervention programs but also comprehensive water sanitation and hygiene intervention programs in schools and particularly girls' boarding schools.



CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter draws conclusions based on the findings of this study and assesses its purpose and objectives. Furthermore, recommendations to address the challenges that were identified are made based on the study findings.

6.2 Conclusions

The review of scholarly work showed that there is a dearth of information on the water and sanitation situation in girls' boarding secondary schools in Malawi and hence the purpose and strength of this study by adding to the knowledge on the subject. The findings on the experiences of learners' use of sanitation and personal hygiene practices revealed that there were macro, meso, and micro levels factors as well as their interactions that influenced learners' use of sanitation facilities and hygiene practices emphasising the complexity of the water and sanitation situation in schools in Malawi. However, it is clear that that many of these factors are often beyond the learners' control.

It can be concluded from the participants' responses that they acknowledged the inadequacy of the water and sanitation facilities and implications on learners' health and education, suggesting the importance of the study topic and the need to improve the current status of water and sanitation facilities at schools. Factors affecting water and sanitation facilities and personal hygiene practices were identified from the study participants and from the reviewed literature. Such factors included poor water and sanitation infrastructure and limited facilities, irregular supply of safe water, school management's apparent lack of responsibility and inconsistent hygiene practices of the learners despite the knowledge that they had on on the importance of hygiene practices such as hand washing.

The present study has shown its public health value with the suggestion that there is a need for a comprehensive public health approach to address the complexity of identified factors.

The participants came up with different suggestions about possible solutions to solve the challenges related the use of water and sanitation facilities and personal hygiene practices. The recommendations that follow are grounded in the three levels of the ecological

modelsuggestions put forward by the participants and the insights that developed from the analysis and interpretation of the findings of this study.

6.3 Recommendations

6.3.1 Macro level

WaterAid (2009) suggested that agreed upon and trusted strategies among the Departments of Water and Sanitation, Education, Health, and Infrastructure Development as well as non-government organisations to provide a solution to the challenges of the menstrual hygiene management in schools should be enforced in all schools. This suggestion implies a high level collaborative effort which calls for political will thereby providing an enabling environment through joint policy dialogue and policy reforms across government departments. Such an approach could also be implemented in schools in Malawi and in girls' boarding schools in particular. This multi-sectoral approach would complement the schools' operation rules that could be designed and enforced to monitor and evaluate the functionality and adequacy of the water and sanitation facilities and hygiene practices to fast track progress.

To address the challenge of the unreliable supply of safe water, which was also found to be a common situation in other schools in Malawi (UNICEF, 2010), findings of this study suggest the need to improve availability of running tap water at the studied school. This could be done by the school management and school board lobbying the Southern Region Water Board for consistent water supply by improving their infrastructure and maintenance in all schools.

6.3.2 Meso level

The meso level factors can be regarded as the school organisational level factors which are the school's responsibility but beyond the learners' capability, such as the maintenance of water and sanitation facilities and infrastructure in the school.

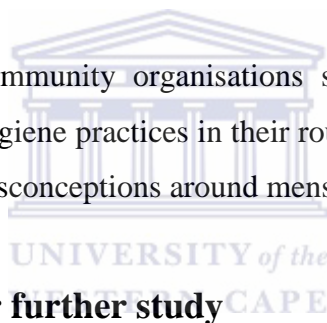
- The school could raise funds to employ temporary staff to ensure water supply and sanitation facilities are cleaned, maintained and are provided with toilet paper, sanitary pads and hygiene related materials.

- This study recommends that the school board should provide the school with resources such as increasing the annual budget that will enable the school to implement the plans for maintaining school infrastructure.
- Schedule joint-meetings between learners, members of school board and parents-teachers' association to discuss in a collaborative and participatory manner the interventions that would enhance the learner's use of water and sanitation facilities at the school.
- Members of the school, school board and PTA should form a committee to agree on strategies such as fundraising mechanisms for providing more water and sanitation facilities including maintenance of infrastructure plans to ensure the learners' privacy and improving their menstrual hygiene practices. For example, raising money to build more pit latrines for girls, to provide doors to toilets and shower cubicles and fixing broken infrastructures that ensures girls privacy and hygiene practices.
- The committee should also be involved in setting up school rules to ensure senior learners respect junior learners and the other way round. Such rules will address unfair practices of the senior learners towards junior learners thereby enforcing rules that promote human rights for all.
- With the unregulated disconnection of water supply by Southern Water Board, the school should raise money to buy more water storage facilities that would ensure the availability of water to learners at all.

6.3.3 Micro level

The findings have shown that despite the learners' awareness of hygiene practices that promote people's health and prevent diseases, their hygiene practices were erratic, meaning that learners failed to implement what they knew about the use of water and sanitation facilities and hygiene practices that would improve their health outcome. This means that the factors influencing their behaviour was largely out of their control. Nevertheless, the learners themselves should be empowered to make their voices heard in the school so that they can be part of the decision making at the school to take more responsibility for their own health. Their use of water and sanitation facilities likely depended on their knowledge, values and practices acquired in their homes as well. It is therefore recommended that:

- The school should have more information around safe water and sanitation, the importance of personal hygiene and address the misconceptions around menstruation by including correct facts in the health education curriculum.
- The parents are also made aware of the importance of proper hygiene practices and adequate water and sanitation facilities, as well as misconceptions around menstruation and the importance of early awareness around issues of menstruation for girls.
- The communities and families should ensure that personal hygiene practices are repeatedly enforced in the following ways:
 - Parents and children should have discussions together at home on personal hygiene practices.
 - Parents and children together or separately should watch television programs and access reading materials on water, sanitation and hygiene practices in homes.
 - Religious and community organisations should have programs on water, sanitations and hygiene practices in their routine gatherings/meetings and also to alleviate the misconceptions around menstruation.



6.3.4 Recommendations for further study

This study recommends that the roles of the micro, meso and macro-levels in the context of schools should be comprehensively studied as proxy for the full understanding on factors that influence learners' use of water and sanitation facilities and personal hygiene practices in schools.

The present study demonstrated the feasibility of using the qualitative study as a platform for designing interventions that would create an enabling environment and raise public awareness at schools and during meetings regarding the factors that influence learners' use of water and sanitation facilities at school. Although the use of qualitative methods revealed in-depth understanding of factors that influence learners' use of water and sanitation facilities in schools, the findings of this study is not sufficient to lobby for a national policy reform for schools in Malawi. Therefore, it is recommended that a study using mixed methods in more than one school be undertaken to influence the initiation of a joint policy dialogue and policy

reform across government departments from meso to macro levels as recommended by WaterAid (2009).

Despite limited field data on all aspects of the micro, meso and macro in this study, the interpretive approach provided by the ecological model provided a comprehensive analysis of the factors that influenced the learners' behaviours in the use of water and sanitation facilities and personal hygiene practices in the school. Therefore, using the ecological model as theoretical framework can be recommended to address water supply, sanitation and hygiene practices in schools because a public health approach requires stakeholders from various disciplines to interact and collaborate at the different levels concomitantly, especially in girls' boarding schools where water and sanitation facilities availability, access and maintenance remain challenges in Malawi and most likely elsewhere in other developing countries.



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APPENDIX 1: CONSENT FORM



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +2721-9592809, Fax: 2721-959287

E-mail: soph-comm@uwc.ac.

CONSENT FORM

Title of Research Project: Understanding the factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

The study has been described to me in a language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Participant's name.....

Participant's signature.....

Date.....

APPENDIX 2: CONSENT FORM CHICHEWA (VERSION)



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KUVOMERA KULOWA NAWO MU KAFUKUFUKU

MUTU WA KAFUKUFUKU: Understanding the factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

Ndikutsimikiza kuti ndawuzidwa zonse zofunikira zomwe zakambidwa mu chikalatachi. Ndikutsimikiza kuti ndinali ndi mwayi ofunsa mafunso ndipo ndakhutila mayankho ake. Ndikutsimikiza kuti ndinali ndi nthawi yoganizira bwino zonse ndauzidwa ndi kukamba ndi anthu ena ndi kusankha kuchita kapena kusachita nawo kafukufukuyi. Ndatsimikiziridwa kuti dzina langa libisika mu chikalatachi. Ndatsimikiziridwa kuti ndili ndi ufulu wochoka mu kafukufukuyi nthawi yina iliyonse popanda kulowa zovuta zili zonse mtsogolo muno.

Dzina:.....

Siginetchala:.....

Dzina:.....

Siginetchala ya ofufuza:.....

Dzina:.....

Tsiku:.....

APPENDIX 3: PARENT CONSENT FORM
UNIVERSITY OF THE WESTERN CAPE



Private Bag X 17, Bellville 7535, South Africa

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E-mail: soph-comm@uwc.ac.

PARENT CONSENT FORM

Title of Research Project: The factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

The study has been described to me in a language that I understand. My questions about the study have been answered. I understand what my child's involvement will be and I agree to let her participate. I understand that her identity will not be disclosed to anyone. I understand that she may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

Participant's name.....

Parent's name.....

Parent's signature.....

Date.....

**APPENDIX 4: PARENT CONSENT FORM CHICHEWA
(VERSION)**



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KUVOMEREZA MWANA KULOWA NAWO MU KAFUKUFUKU

MUTU WA KAFUKUFUKU: The factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

Ndikutsimikiza kuti ndawuzidwa zonse zofunikira zomwe zakambidwa mu chikalatachi. Ndikutsimikiza kuti ndinali ndi mwayi ofunsa mafunso ndipo ndakhutira mayankho ake. Ndikutsimikiza kuti ndinali ndi nthawi yoganzira mwana wanga pa zonse ndauzidwa ndi kukamba ndi mwanayo kusankha kuchita kapena kusachita nawo kafukufukuyi. Ndatsimikiziridwa kuti dzina mwana wanga libisika mu chikalatachi. Ndatsimikiziridwa kuti mwana wanga ali ndi ufulu wochoka mu kafukufukuyi nthawi yina iliyonse popanda kulowa zovuta zili zonse mtsogolo muno.

Dzina la mwana:.....

Dzina la kholo:.....

Siginetchala ya kholo:.....

Tsiku:.....

APPENDIX 5: INFORMATION SHEET



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +2721-9592809, Fax: 2721-959287

E-mail: soph-comm@uwc.ac.

INFORMATION SHEET

Project Title: Understanding the factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

What is this study about?

This is a research project being conducted by Joyce Kanyerere at the University of the Western Cape. We are inviting you to participate in this research project because you have experience of sanitation problems at this school. The purpose of this research project is to understand the factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

What will I be asked to do if I agree to participate?

You will be asked to take time to read the given information carefully. Talk to others about the study if you wish. Ask me if there is anything that is not clear or if you would like more information. Once you have done this, take some time to decide whether or not you wish to take part. If you have any problem, contact me whose details are provided below.

The study location:

The study will be conducted at your school. Before beginning the study, approval will be obtained from Malawi National Health Sciences Research Committee, Ministry of Health and from the University of the Western Cape Research Committee. The duration of this study will be one month. There are no special requirements for participation in the study except your

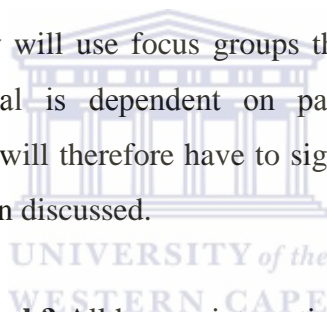
consent. No harm will come to you if you participate but the benefits of participation in the study might be better sanitation facilities at your school to improve your use of the facilities. Participation is voluntary.

Would my participation in this study be kept confidential?

To ensure your anonymity, the study will not contain information that may personally identify you. Your name will not be included on the collected data; only the researcher will have access to the identification.

To ensure your confidentiality: The study files will be locked and protected by password together with the laptop. I will do this to make sure that your information and identity remain confidential.

Using focus groups: This study will use focus groups therefore the extent to which your identity will remain confidential is dependent on participants' in the Focus Group maintaining confidentiality. You will therefore have to sign the confidentiality binding form to agree not to divulge information discussed.



What are the risks of this research? All human interactions and talking about self or others carry some amount of risks. I will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research? This research is not designed to help you personally, but the results may help me to learn more about sanitation problems. We hope that, in the future, other people might benefit from this study through improved understanding of the sanitation problem.

The anticipated benefits to science or society expected from the research

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If

you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

What if I have questions? This research is being conducted by myself, Joyce Kanyerere School of Public Health at the University of the Western Cape. If you have any questions about the research study itself, please contact Joyce Kanyerere at: St. Marys' Girls secondary, Box 149, Zomba, Malawi. E-mail; joykanyerere@gmail.com. Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

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School of Public Health

Head of Department

University of the Western Cape

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APPENDIX 6: INFORMATION SHEET (CHICHEWA VERSION)



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UTHENGA WAMUKALATAYI

MUTU WA KAFUKUFUKU: Understanding the factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

Zikomo Asungwana,

Zikomo kwambiri polola kumva za kafukufukuyu. Pano ndifuna ndikulongozoleni za kafukufukuyu ndi momwe mungatengerepo mbali. Kafukufukuyu ndi gawo limodzi la maphunziro limene ndikuyenera kuchita pa maphunziro anga a ukachenjede wa kuona za mavuto azaukhondo, kuchepa kwa dzimbuzi ndi malo wosambira mumanja mu sukulu za asungwana za sekondale zogonera konko amene ndili pafupi kumaliza ku univesite yaku Western Cape. Mukhale omasuka kufunsa pamene simunamvetse. Mutha kundifunsa kapena kundipeza pa manambala amene ndawalemba pamapeto pa kalatayi. Mungathenso kuwafunsa aphunzitsi anga pa nambala zomwe ndawalemba pamapeto pa kalatayi.

UFULU WOLOLA KUPANGA KAFUKUFUKUYU KAPENA KUSIYA

Muli ndi ufulu wolola kukhala m'modzi mwa anthu opanga nawo kafukufukuyu kapena ayi. Mukasankha kutenga nawo mbali pa kafukufukuyu muli ndi ufulu wosiya mutafuna kutero nthawi ina iliyonse ndipo palibe mlandu kapena chovuta china chilichonse mutatelo. Ngati simukufuna kuyankha funso lina lililonse lofunsidwa muthanso kutelo ndipo palibe chovuta china chilichonse kapena choletsa.

CHINSISI

Dzina lanu lidzasungidwa mwachinsisi nthawi zonse. Ndidzatsekera zomwe tidzakambirane zonse limodzi ndi kalata ya chilolezo yovomera kuchita nawo kafukufukuyu yomwe ndidzakufunsani kusaina posonyeza kuvomera kupanga nawo kafukufukuyu nthawi yonse ya kafukufukuyu. Pomaliza pa kafukufukuyu zonse zomwe takambiranazi ndi kulembedwa zizaotchedwa.

ZOOPSA/ RISKS OF THE RESEARCH

Ziwani kuti pamene anthu akukumana kukambirana za iwo kapena za anthu ena pamakhala zovuta zambiri. Koma tiyetsetsa kuti tichepese zovutazi. Ngati kukambirana kwathu kungakukumbuseni mavuto amu mbuyo amene munakumana nawo, tikuthandizani kuti zithere pompano chifukwa sicholinga chatu.

CHOLWA

Palibe cholowa china chilichonse chimene mudzapeze potengapo mbali pa kafukufukuyi. Zosatira zake mwina zithandiza wofufuza kudziwa zambiri za mavuto azaukhondo wa asungwana womwe akukumana nawo muma sekondale wogonera konko. Tikukhulupilira kuti anthu ena mtsogolomuno azathandizika ndi kafukufukuyi.

NGATI MULI NDI MAFUNSO

Kafukufuku akachitidwa ndi Joyce Kanyerere kuchokera ku bungwe la SOPH, University of the Western Cape. Ngati muli ndi mafunso ukhuzana ndi kafukufukuyi, chonde ayimbireni

Joyce Kanyerere ku St Mary's Girls Secondary School

Nambala ya telefoni yam'manja: +265884191133

Nambala yaku ntchito +2651524910

E-mail: joykanyerere@gmail.com

Aphunzitsi anga ndi mai Suraya Mohamed a ku Univesite ya Western Cape. Nambala yawo ya telefoni ya m'manja ndi 27 (0)837865238, yaku ntchito ndi 27 (0) 219592809 kapena E- Mail: sumohamed@uwc.ac.za.

Or c/o The School of Public Health

Fax 27 (0) 21 959 2872.

APPENDIX 7: FOCUS GROUP CONFIDENTIALITY BINDING FORM



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FOCUS GROUP CONFIDENTIALITY BINDING FORM

Title of Research Project: Understanding the factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits. I understand that confidentiality is dependent on participants' in the Focus Group maintaining confidentiality. I hereby agree to uphold the confidentiality of the discussions in the focus group by not disclosing the identity of other participants or any aspects of their contributions to members outside of the group.

Participant's name.....

Participant's signature.....

Date.....

APPENDIX 8: FOCUS GROUP CONFIDENTIALITY BINDING FORM (CHICHEWA VESION)



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KUKAMBIRANA KWA CHINSINSI KWA GULU

MUTU WA KAFUKUFUKU: Understanding the factors that influence learners' use of the sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

Ndikutsimikiza kuti ndawuzidwa zonse zofunikira zomwe zakambidwa mu chikalatachi. Ndikutsimikiza kuti ndinali ndi mwayi ofunsa mafunso ndipo ndakhutula mayankho ake. Ndikutsimikiza kuti ndinali ndi nthawi yoganzira bwino zonse ndauzidwa ndi kukamba ndi anthu ena ndi kusankha kuchita kapena kusachita nawo kafukufukuyi. Ndatsimikiziridwa kuti dzina langa libisika mu chikalatachi. Ndatsimikiziridwa kuti ndili ndi ufulu wochoka mu kafukufukuyi nthawi yina iliyonse popanda kulowa zovuta zili zonse mtsogolo muno. Ndatsimikiziridwa kuti zikhala kwa ife ngati gulu kusunga chinsinsi pa zimene takambiranazi.

Ndilipano kuvomereza kupitiliza kusunga chinsinsi pa zimene takambira mukati mwagulu posaulula munthu wina aliyese amene anatenga nawo mbali kapena kuwulula zokambiranazo kwa anthu ena amene kunalibe.

Dzina:.....

Siginetchala:.....

Tsiku:.....

APPENDIX 9: INTERVIEW GUIDE FOR INDIVIDUAL INTERVIEWS WITH TEACHERS AND MATRON

Demographic information

1. What is your age? Or when were you born?
2. How many years have you been working at this school?
3. Tell me about some of your responsibilities at the school

Description of sanitation and water facilities

4. Can you describe the sanitation and water facilities in this girl's school?

Probes:

Number of toilets per number of learners; number of water facilities per number of learners

Adequate water supply for every day functioning of toilets and for girls' hygiene practices

Conditions of toilets

5. Describe how the sanitation facilities are kept clean

Probe:

How often are they cleaned? What are they using to clean them?

Is the time table being adhering to by learners? Who cleans sanitation facilities?

Girls' use of sanitation and water facilities

6. What is your opinion of the girls' use of sanitation facilities?

Probes:

Hand washing practices

Practices during menstruation

Flushing of toilets

Feelings about sanitation situation

7. Tell me how you feel about the current sanitation situation in this school



Probes:

Why is the sanitation situation the way it is?

8. What do you think is the proper way of maintaining good sanitation among girls?

Probes:

Why do you think so?



APPENDIX 10: INTERVIEW GUIDE FOR INDIVIDUAL INTERVIEWS WITH TEACHERS AND MATRON (CHICHEWA VERSION)

MLOZO WOTSOGOLERA APHUNZITSI NDI WOTHANDIZA ASUGWANA
MAFUSO AKE

Muli ndi zaka zingati or munabadwa chaka chanji?

Mwakhala zaka zingati pa sukulu pano?

Ntcito yanu ndiyotani ?

Kolongosolaza ukhondo ndi madzi

1. **Tandiuzani mayi ukhondo wa asungwana ulibwanji pa sukulu** pano?

Kufutsitsitsa

Muli ndi dzimbuzi zingati? Nanga mumazigawa bwanji ndi kuchuluka kwa asungwana? Muli ndi madzi wokwanila ,ndipo amatuluka tsiku lilironse ku dzimbuzizi?

Mawonekedwe a dzimbuzi

5. Fotokozani mumatani kuti dzimbuzi zizikhala za ukhondo nthwawi zonse

Kufutsitsitsa

Mumazismala bwanji ndipo mumazisuka kangati pa tsiku?

6. Kagwiritsidwa ntchito ka asungwana ka zipangizo za ukhondo

Maganizo anu ndi wotani mumene asungwana akugwiritsira ntchito zipangizo zaukhondo ?

Kufutsitsitsa

Amasamba mumanja?

Amatani akakhala ku mwezi?

Amagujumula zimbuji?

APPENDIX 11: INTERVIEW GUIDE FOR INDIVIDUAL PREFECTS

1. What is your age? Or when were you born?
2. How many years have you been at this school?
3. Tell me about some of your responsibilities at the school

Sanitation facilities at school

4. What do you think of the sanitation facilities in this school?

Probes:

Why do you think things are in this way?

What are your suggestions with regards to what you have said?

Please can you explain more about that?

Water and sanitation problems at school

5. Explain problems of water and sanitation that you have in this school?

Probes:

Why are you saying like that?

What do you think are the causes of what you have said?

What has the school done to address the water and sanitation challenges?

Girls' experience regarding sanitation at school

6. What is your experience of the hygiene practices of girls?

Probes:

Please explain why are saying like that

Why do you think things are like that?

Suggested solutions to water and sanitation challenges

7. What do you think can be the solutions for the water and sanitation challenges?

Probes:

Why are you suggesting such things?

Please explain how such solution can work here practically or realistically?

APPENDIX 12: INTERVIEW GUIDE FOR INDIVIDUAL PREFECTS (CHICHEWA VERSION)

MLOZO WOTSOGOLERA WOPHUNZIRA WOYANG'ANIRA ZAUKHONDO MU MAKALASI

MAFUSO AKE

Zipangizo za ukhondo pa sukulu

1. Mulu ndi zaka zingati?
2. Mwakhala pano zaka zingati
3. Tandiuzeni undindo wanu pa sukulu pano
4. Mukuganiza bwanji ndi ukhondo wa pa sukulu pano?

Kufutsitsitsa

Mukuganiza kuti zinthu zili choncho chifukwa chiyani?

Maganizo anu ndoiwotani pa nkhaniyi?

Talongosolani kwambiri pamenepo

Mabvuto a madzi ndi ukhondo

5. Longosolani za mabvuto amadzi ndi ukhondo pa sukulu pano

Kufutsitsitsa

Talongosolani kwambiri pamenepo

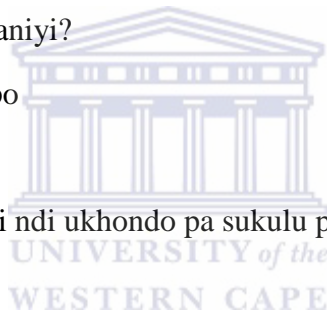
Njira zothetsera mabvutowa

6. Mukuganiza kuti ndi njira ziti zomwe mungathetsere mabvutowa?

Kufutsitsitsa

Chifukwa chain mukuganizira njira zimezo?

Tawonjezera pa zomwe mwanena



APPENDIX 13: INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSIONS

The individual participants will be asked to introduce themselves to the group and how long they have been at the school

Perception about sanitation and water facilities at school

1. What do you think of the sanitation and water facilities that you have in this school

Probes:

What do you think are the issues regarding using such facilities?

Why are you saying so? What hygiene practices do girls follow at this school?

Why do you think that they follow such practices? Please explain what you are saying?

Experiences when using sanitation facilities at school

2. What are your experiences when using the sanitation facilities?

Probes:

Why are you saying so?

Could you please say something more about what you are talking about?

Probes:

Challenges, difficulties, feeling whether or not they comfortable to use the existing facilities and reasons for their feeling for doing their way

Maintaining good sanitation practices at school

3. How can you maintain good practices of sanitation use at this school?

Probes:

Explain different ways of maintaining good practices at this school

What improvements do you think should be made to make your experience of using the sanitation facilities better? Why do you think so?

APPENDIX 14: INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSIONS (CHICHEWA VERSION)

MLOZO WOTSOGOLERA WOPHUNZIRA PA GULU MAFUSO AKE

Maganizo anu ndiwota ku nkhani ya madzi ndi ukhondo

1. Mukuganiza bwanji ku nkhani ya madzi ndi ukhondo pa school pano?

Kufutsitsitsa

Mukuganiza kuti ndi chiyani chikupangisa zimenezi?

Mukunena choncho chifukwa chiyani?

Chonde talongosolani zambiri pamenepo

Nthawi yomwe akhala akukumana ndi zamavuto azaukhondo

2. Ndizotani zomwe mwakhala mukukumana nazo nthawi yonseyi?

Tanenani zambiri pamenepo.

Mabvuto ena ndiwotani? Nanga zifukwa zake ndizotani?

Kupitiliza kukhala awukhondo

3. Mutha kumatani kuti mupitirize kukhala ndi ukhondo wabwino

Kufutsitsitsa

Tandiuzani njira zingapo zomwe mungapitilizire kukhala ndi ukhondpo

Mutha kuwonjezapo chain pa zimene mwanenazo

Chifukwa chiyani mukunena choncho?



APPENDIX 15: OBSERVATION GUIDE FOR THE RESEARCHER

1. Learners' hand washing practices
2. Learners' reactions as they visited the toilets
3. Learners' facial expressions when entering and leaving the toilets
4. Learners' behaviours when using sanitation facilities
5. Non-verbal actions of their use of sanitation facilities
6. General conditions of toilets and disposal of the sanitary related material in the toilets
7. General conditions of the incinerator where learners dispose and burn of their used pads
8. General conditions of shower cubicles.



APPENDIX 16: PERMISSION LETTER FROM UWC RESEARCH ETHICS COMMITTEE TO CONDUCT A STUDY



UNIVERSITY of the
WESTERN CAPE

DEPARTMENT OF RESEARCH DEVELOPMENT

18 January 2016

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape approved the methodology and ethics of the following research project by:
Mrs J Kanyerere (School of Public Health)

Research Project:

The factors that influence learners' use of sanitation facilities and personal hygiene practices in a girls boarding secondary school in Zomba District, Malawi.

Registration no:

15/7/258

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in black ink, appearing to read 'Patricia Josias'.

*Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape*

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A place of quality,
a place to grow, from hope
to action through knowledge